

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 March 2002 (21.03.2002)

PCT

(10) International Publication Number
WO 02/22802 A1

(51) International Patent Classification⁷: **C12N 15/00**,
15/12, C07K 14/435

(21) International Application Number: PCT/US01/28462

(22) International Filing Date:
13 September 2001 (13.09.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/232,463 13 September 2000 (13.09.2000) US
60/232,455 13 September 2000 (13.09.2000) US
60/237,293 2 October 2000 (02.10.2000) US
60/246,269 7 November 2000 (07.11.2000) US
60/252,049 20 November 2000 (20.11.2000) US

(71) Applicants (*for all designated States except US*):
SMITHKLINE BEECHAM CORPORATION
[US/US]; One Franklin Plaza, Philadelphia, PA 19103
(US). **SMITHKLINE BEECHAM P.L.C.** [GB/GB]; New
Horizons Court, Great West Road, Brentford, Middlesex
TW8 9EP (GB). **GLAXO GROUP LIMITED** [GB/GB];
Glaxo House, Berkeley Avenue, Greenford, Middlesex
UB6 0NN (GB).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **AGARWAL,**
Pankaj [IN/US]; 251 West DeKalb Pike, King of Prussia,
PA 19406 (US). **GOGSWELL, John, P.** [US/US]; Five
Moore Drive, Research Triangle Park, NC 27709 (US).
LAI, Ying-Ta [CN/US]; 516 Spruce Avenue, Upper Darby,
PA 19082 (US). **MARTENSEN, Shelby, A.** [US/US];
Five Moore Drive, Research Triangle Park, NC 27709
(US). **SMITH, Randall, F.** [US/US]; 4138 Presidential

Drive, Lafayette Hill, PA 19444 (US). **STRUM, Jay, C.**
[US/US]; Five Moore Drive, Research Triangle Park, NC
27709 (US). **XIE, Qing** [CN/US]; 310 Sawmill Lane,
Horsham, PA 19044 (US).

(74) Agents: **FEDON, Jason, C.** et al.; SmithKline Beecham
Corporation, Corporate Intellectual Property, UW2220,
709 Swedeland Road, P.O. Box 1539, King of Prussia, PA
19406-0939 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, CA, CH, CN, CO, CR, CU, CZ,
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO,
NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,
TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments
- with sequence listing part of description published sepa-
rately in electronic form and available upon request from
the International Bureau

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: NOVEL COMPOUNDS

(57) Abstract: Polypeptides and polynucleotides of the genes set forth in Table I and methods for producing such polypeptides by recombinant techniques are disclosed. Also disclosed are methods for utilizing polypeptides and polynucleotides of the genes set forth in Table I in diagnostic assays.



WO 02/22802 A1

Novel Compounds

Field of Invention

This invention relates to newly identified polypeptides and polynucleotides encoding such polypeptides, to their use in diagnosis and in identifying compounds that may be agonists, antagonists that are potentially useful in therapy, and to production of such polypeptides and polynucleotides. The polynucleotides and polypeptides of the present invention also relate to proteins with signal sequences which allow them to be secreted extracellularly or membrane-associated (hereinafter often referred collectively as secreted proteins or secreted polypeptides).

Background of the Invention

The drug discovery process is currently undergoing a fundamental revolution as it embraces "functional genomics", that is, high throughput genome- or gene-based biology. This approach as a means to identify genes and gene products as therapeutic targets is rapidly superseding earlier approaches based on "positional cloning". A phenotype, that is a biological function or genetic disease, would be identified and this would then be tracked back to the responsible gene, based on its genetic map position.

Functional genomics relies heavily on high-throughput DNA sequencing technologies and the various tools of bioinformatics to identify gene sequences of potential interest from the many molecular biology databases now available. There is a continuing need to identify and characterise further genes and their related polypeptides/proteins, as targets for drug discovery.

Proteins and polypeptides that are naturally secreted into blood, lymph and other body fluids, or secreted into the cellular membrane are of primary interest for pharmaceutical research and development. The reason for this interest is the relative ease to target protein therapeutics into their place of action (body fluids or the cellular membrane). The natural pathway for protein secretion into extracellular space is the endoplasmic reticulum in eukaryotes and the inner membrane in prokaryotes (Palade, 1975, Science, 189, 347; Milstein, Brownlee, Harrison, and Mathews, 1972, Nature New Biol., 239, 117; Blobel, and Dobberstein, 1975, J. Cell. Biol., 67, 835). On the other hand, there is no known natural pathway for exporting a protein from the exterior of the cells into the cytosol (with the exception of pinocytosis, a mechanism of snake venom toxin intrusion into cells). Therefore targeting protein therapeutics into cells poses extreme difficulties.

The secreted and membrane-associated proteins include but are not limited

to all peptide hormones and their receptors (including but not limited to insulin, growth hormones, chemokines, cytokines, neuropeptides, integrins, kallikreins, lamins, melanins, natriuretic hormones, neuropsin, neurotrophins, pituitary hormones, pleiotropins, prostaglandins, secretogranins, selectins, thromboglobulins, thymosins), the breast and colon cancer gene products, leptin, the obesity gene protein and its receptors, serum albumin, superoxide dismutase, spliceosome proteins, 7TM (transmembrane) proteins also called as G-protein coupled receptors, immunoglobulins, several families of serine proteinases (including but not limited to proteins of the blood coagulation cascade, digestive enzymes), deoxyribonuclease I, etc.

Therapeutics based on secreted or membrane-associated proteins approved by FDA or foreign agencies include but are not limited to insulin, glucagon, growth hormone, chorionic gonadotropin, follicle stimulating hormone, luteinizing hormone, calcitonin, adrenocorticotrophic hormone (ACTH), vasopressin, interleukines, interferones, immunoglobulins, lactoferrin (diverse products marketed by several companies), tissue-type plasminogen activator (Alteplase by Genentech), hyaluronidase (Wydase by Wyeth-Ayerst), dornase alpha (Pulmozyme by Genentech), Chymodiactin (chymopapain by Knoll), alglucerase (Ceredase by Genzyme), streptokinase (Kabikinase by Pharmacia) (Streptase by Astra), etc. This indicates that secreted and membrane-associated proteins have an established, proven history as therapeutic targets. Clearly, there is a need for identification and characterization of further secreted and membrane-associated proteins which can play a role in preventing, ameliorating or correcting dysfunction or disease, including but not limited to diabetes, breast-, prostate-, colon cancer and other malignant tumors, hyper- and hypotension, obesity, bulimia, anorexia, growth abnormalities, asthma, manic depression, dementia, delirium, mental retardation, Huntington's disease, Tourette's syndrome, schizophrenia, growth, mental or sexual development disorders, and dysfunctions of the blood cascade system including those leading to stroke. The proteins of the present invention which include the signal sequences are also useful to further elucidate the mechanism of protein transport which at present is not entirely understood, and thus can be used as research tools.

Summary of the Invention

The present invention relates to particular polypeptides and polynucleotides of the genes set forth in Table I, including recombinant materials and methods for their production. Such polypeptides and polynucleotides are of interest in relation to methods of treatment of

certain diseases, including, but not limited to, the diseases set forth in Tables III and V, hereinafter referred to as "diseases of the invention". In a further aspect, the invention relates to methods for identifying agonists and antagonists (*e.g.*, inhibitors) using the materials provided by the invention, and treating conditions associated with imbalance of polypeptides and/or polynucleotides of the genes set forth in Table I with the identified compounds. In still a further aspect, the invention relates to diagnostic assays for detecting diseases associated with inappropriate activity or levels the genes set forth in Table I. Another aspect of the invention concerns a polynucleotide comprising any of the nucleotide sequences set forth in the Sequence Listing and a polypeptide comprising a polypeptide encoded by the nucleotide sequence. In another aspect, the invention relates to a polypeptide comprising any of the polypeptide sequences set forth in the Sequence Listing and recombinant materials and methods for their production. Another aspect of the invention relates to methods for using such polypeptides and polynucleotides. Such uses include the treatment of diseases, abnormalities and disorders (hereinafter simply referred to as diseases) caused by abnormal expression, production, function and or metabolism of the genes of this invention, and such diseases are readily apparent by those skilled in the art from the homology to other proteins disclosed for each attached sequence. In still another aspect, the invention relates to methods to identify agonists and antagonists using the materials provided by the invention, and treating conditions associated with the imbalance with the identified compounds. Yet another aspect of the invention relates to diagnostic assays for detecting diseases associated with inappropriate activity or levels of the secreted proteins of the present invention.

Description of the Invention

In a first aspect, the present invention relates to polypeptides the genes set forth in Table I. Such polypeptides include:

- (a) an isolated polypeptide encoded by a polynucleotide comprising a sequence set forth in the Sequence Listing, herein when referring to polynucleotides or polypeptides of the Sequence Listing, a reference is also made to the Sequence Listing referred to in the Sequence Listing;
- (b) an isolated polypeptide comprising a polypeptide sequence having at least 95%, 96%, 97%, 98%, or 99% identity to a polypeptide sequence set forth in the Sequence Listing;
- (c) an isolated polypeptide comprising a polypeptide sequence set forth in the Sequence Listing;

- (d) an isolated polypeptide having at least 95%, 96%, 97%, 98%, or 99% identity to a polypeptide sequence set forth in the Sequence Listing;
- (e) a polypeptide sequence set forth in the Sequence Listing; and
- (f) an isolated polypeptide having or comprising a polypeptide sequence that has an Identity Index of 0.95, 0.96, 0.97, 0.98, or 0.99 compared to a polypeptide sequence set forth in the Sequence Listing;
- (g) fragments and variants of such polypeptides in (a) to (f).

Polypeptides of the present invention are believed to be members of the gene families set forth in Table II. They are therefore of therapeutic and diagnostic interest for the reasons set forth in Tables III and V. The biological properties of the polypeptides and polynucleotides of the genes set forth in Table I are hereinafter referred to as "the biological activity" of polypeptides and polynucleotides of the genes set forth in Table I. Preferably, a polypeptide of the present invention exhibits at least one biological activity of the genes set forth in Table I.

Polypeptides of the present invention also include variants of the aforementioned polypeptides, including all allelic forms and splice variants. Such polypeptides vary from the reference polypeptide by insertions, deletions, and substitutions that may be conservative or non-conservative, or any combination thereof. Particularly preferred variants are those in which several, for instance from 50 to 30, from 30 to 20, from 20 to 10, from 10 to 5, from 5 to 3, from 3 to 2, from 2 to 1 or 1 amino acids are inserted, substituted, or deleted, in any combination.

Preferred fragments of polypeptides of the present invention include an isolated polypeptide comprising an amino acid sequence having at least 30, 50 or 100 contiguous amino acids from an amino acid sequence set forth in the Sequence Listing, or an isolated polypeptide comprising an amino acid sequence having at least 30, 50 or 100 contiguous amino acids truncated or deleted from an amino acid sequence set forth in the Sequence Listing. Preferred fragments are biologically active fragments that mediate the biological activity of polypeptides and polynucleotides of the genes set forth in Table I, including those with a similar activity or an improved activity, or with a decreased undesirable activity. Also preferred are those fragments that are antigenic or immunogenic in an animal, especially in a human.

Fragments of a polypeptide of the invention may be employed for producing the corresponding full-length polypeptide by peptide synthesis; therefore, these variants may be employed as intermediates for producing the full-length polypeptides of the invention. A polypeptide of the present invention may be in the form of the "mature" protein or may be a

part of a larger protein such as a precursor or a fusion protein. It is often advantageous to include an additional amino acid sequence that contains secretory or leader sequences, pro-sequences, sequences that aid in purification, for instance multiple histidine residues, or an additional sequence for stability during recombinant production.

- 5 Polypeptides of the present invention can be prepared in any suitable manner, for instance by isolation from naturally occurring sources, from genetically engineered host cells comprising expression systems (*vide infra*) or by chemical synthesis, using for instance automated peptide synthesizers, or a combination of such methods. Means for preparing such polypeptides are well understood in the art.
- 10 In a further aspect, the present invention relates to polynucleotides of the genes set forth in Table I. Such polynucleotides include:
- (a) an isolated polynucleotide comprising a polynucleotide sequence having at least 95%, 96%, 97%, 98%, or 99% identity to a polynucleotide sequence set forth in the Sequence Listing;
 - 15 (b) an isolated polynucleotide comprising a polynucleotide set forth in the Sequence Listing;
 - (c) an isolated polynucleotide having at least 95%, 96%, 97%, 98%, or 99% identity to a polynucleotide set forth in the Sequence Listing;
 - (d) an isolated polynucleotide set forth in the Sequence Listing;
 - 20 (e) an isolated polynucleotide comprising a polynucleotide sequence encoding a polypeptide sequence having at least 95%, 96%, 97%, 98%, or 99% identity to a polypeptide sequence set forth in the Sequence Listing;
 - (f) an isolated polynucleotide comprising a polynucleotide sequence encoding a polypeptide set forth in the Sequence Listing;
 - 25 (g) an isolated polynucleotide having a polynucleotide sequence encoding a polypeptide sequence having at least 95%, 96%, 97%, 98%, or 99% identity to a polypeptide sequence set forth in the Sequence Listing;
 - (h) an isolated polynucleotide encoding a polypeptide set forth in the Sequence Listing;
 - (i) an isolated polynucleotide having or comprising a polynucleotide sequence that has an
 - 30 Identity Index of 0.95, 0.96, 0.97, 0.98, or 0.99 compared to a polynucleotide sequence set forth in the Sequence Listing;
 - (j) an isolated polynucleotide having or comprising a polynucleotide sequence encoding a polypeptide sequence that has an Identity Index of 0.95, 0.96, 0.97, 0.98, or 0.99 compared to a polypeptide sequence set forth in the Sequence Listing; and

polynucleotides that are fragments and variants of the above mentioned polynucleotides or that are complementary to above mentioned polynucleotides, over the entire length thereof.

Preferred fragments of polynucleotides of the present invention include an isolated polynucleotide comprising a nucleotide sequence having at least 15, 30, 50 or 100
5 contiguous nucleotides from a sequence set forth in the Sequence Listing, or an isolated polynucleotide comprising a sequence having at least 30, 50 or 100 contiguous nucleotides truncated or deleted from a sequence set forth in the Sequence Listing.

Preferred variants of polynucleotides of the present invention include splice variants, allelic variants, and polymorphisms, including polynucleotides having one or more
10 single nucleotide polymorphisms (SNPs).

Polynucleotides of the present invention also include polynucleotides encoding polypeptide variants that comprise an amino acid sequence set forth in the Sequence Listing and in which several, for instance from 50 to 30, from 30 to 20, from 20 to 10, from 10 to 5, from 5 to 3, from 3 to 2, from 2 to 1 or 1 amino acid residues are substituted, deleted or
15 added, in any combination.

In a further aspect, the present invention provides polynucleotides that are RNA transcripts of the DNA sequences of the present invention. Accordingly, there is provided an RNA polynucleotide that:

(a) comprises an RNA transcript of the DNA sequence encoding a polypeptide set
20 forth in the Sequence Listing;

(b) is a RNA transcript of a DNA sequence encoding a polypeptide set forth in the Sequence Listing;

(c) comprises an RNA transcript of a DNA sequence set forth in the Sequence Listing; or

25 (d) is a RNA transcript of a DNA sequence set forth in the Sequence Listing; and RNA polynucleotides that are complementary thereto.

The polynucleotide sequences set forth in the Sequence Listing show homology with the polynucleotide sequences set forth in Table II. A polynucleotide sequence set forth in the Sequence Listing is a cDNA sequence that encodes a polypeptide set forth in the
30 Sequence Listing. A polynucleotide sequence encoding a polypeptide set forth in the Sequence Listing may be identical to a polypeptide encoding a sequence set forth in the Sequence Listing or it may be a sequence other than a sequence set forth in the Sequence Listing, which, as a result of the redundancy (degeneracy) of the genetic code, also encodes a polypeptide set forth in the Sequence Listing. A polypeptide of a sequence set forth in the
35 Sequence Listing is related to other proteins of the gene families set forth in Table II, having

homology and/or structural similarity with the polypeptides set forth in Table II. Preferred polypeptides and polynucleotides of the present invention are expected to have, *inter alia*, similar biological functions/properties to their homologous polypeptides and polynucleotides. Furthermore, preferred polypeptides and polynucleotides of the present invention have at least one activity of the genes set forth in Table I.

Polynucleotides of the present invention may be obtained using standard cloning and screening techniques from a cDNA library derived from mRNA from the tissues set forth in Table IV (see for instance, Sambrook *et al.*, Molecular Cloning: A Laboratory Manual, 2nd Ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y. (1989)). Polynucleotides of the invention can also be obtained from natural sources such as genomic DNA libraries or can be synthesized using well known and commercially available techniques.

When polynucleotides of the present invention are used for the recombinant production of polypeptides of the present invention, the polynucleotide may include the coding sequence for the mature polypeptide, by itself, or the coding sequence for the mature polypeptide in reading frame with other coding sequences, such as those encoding a leader or secretory sequence, a pre-, or pro- or prepro- protein sequence, or other fusion peptide portions. For example, a marker sequence that facilitates purification of the fused polypeptide can be encoded. In certain preferred embodiments of this aspect of the invention, the marker sequence is a hexa-histidine peptide, as provided in the pQE vector (Qiagen, Inc.) and described in Gentz *et al.*, Proc Natl Acad Sci USA (1989) 86:821-824, or is an HA tag. A polynucleotide may also contain non-coding 5' and 3' sequences, such as transcribed, non-translated sequences, splicing and polyadenylation signals, ribosome binding sites and sequences that stabilize mRNA.

Polynucleotides that are identical, or have sufficient identity to a polynucleotide sequence set forth in the Sequence Listing, may be used as hybridization probes for cDNA and genomic DNA or as primers for a nucleic acid amplification reaction (for instance, PCR). Such probes and primers may be used to isolate full-length cDNAs and genomic clones encoding polypeptides of the present invention and to isolate cDNA and genomic clones of other genes (including genes encoding paralogs from human sources and orthologs and paralogs from other species) that have a high sequence similarity to sequences set forth in the Sequence Listing, typically at least 95% identity. Preferred probes and primers will generally comprise at least 15 nucleotides, preferably, at least 30 nucleotides and may have at least 50, if not at least 100 nucleotides. Particularly preferred probes will have between

30 and 50 nucleotides. Particularly preferred primers will have between 20 and 25 nucleotides.

A polynucleotide encoding a polypeptide of the present invention, including homologs from other species, may be obtained by a process comprising the steps of
5 screening a library under stringent hybridization conditions with a labeled probe having a sequence set forth in the Sequence Listing or a fragment thereof, preferably of at least 15 nucleotides; and isolating full-length cDNA and genomic clones containing the polynucleotide sequence set forth in the Sequence Listing. Such hybridization techniques are well known to the skilled artisan. Preferred stringent hybridization conditions include
10 overnight incubation at 42°C in a solution comprising: 50% formamide, 5xSSC (150mM NaCl, 15mM trisodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10 % dextran sulfate, and 20 microgram/ml denatured, sheared salmon sperm DNA; followed by washing the filters in 0.1x SSC at about 65°C. Thus the present invention also includes isolated polynucleotides, preferably with a nucleotide sequence of at least 100,
15 obtained by screening a library under stringent hybridization conditions with a labeled probe having the sequence set forth in the Sequence Listing or a fragment thereof, preferably of at least 15 nucleotides.

The skilled artisan will appreciate that, in many cases, an isolated cDNA sequence will be incomplete, in that the region coding for the polypeptide does not extend all the way
20 through to the 5' terminus. This is a consequence of reverse transcriptase, an enzyme with inherently low "processivity" (a measure of the ability of the enzyme to remain attached to the template during the polymerisation reaction), failing to complete a DNA copy of the mRNA template during first strand cDNA synthesis.

There are several methods available and well known to those skilled in the art to
25 obtain full-length cDNAs, or extend short cDNAs, for example those based on the method of Rapid Amplification of cDNA ends (RACE) (see, for example, Frohman et al., Proc Nat Acad Sci USA 85, 8998-9002, 1988). Recent modifications of the technique, exemplified by the Marathon (trade mark) technology (Clontech Laboratories Inc.) for example, have significantly simplified the search for longer cDNAs. In the Marathon (trade mark)
30 technology, cDNAs have been prepared from mRNA extracted from a chosen tissue and an 'adaptor' sequence ligated onto each end. Nucleic acid amplification (PCR) is then carried out to amplify the "missing" 5' end of the cDNA using a combination of gene specific and adaptor specific oligonucleotide primers. The PCR reaction is then repeated using 'nested' primers, that is, primers designed to anneal within the amplified product (typically an
35 adapter specific primer that anneals further 3' in the adaptor sequence and a gene specific

primer that anneals further 5' in the known gene sequence). The products of this reaction can then be analyzed by DNA sequencing and a full-length cDNA constructed either by joining the product directly to the existing cDNA to give a complete sequence, or carrying out a separate full-length PCR using the new sequence information for the design of the 5' primer.

Recombinant polypeptides of the present invention may be prepared by processes well known in the art from genetically engineered host cells comprising expression systems. Accordingly, in a further aspect, the present invention relates to expression systems comprising a polynucleotide or polynucleotides of the present invention, to host cells which are genetically engineered with such expression systems and to the production of polypeptides of the invention by recombinant techniques. Cell-free translation systems can also be employed to produce such proteins using RNAs derived from the DNA constructs of the present invention.

For recombinant production, host cells can be genetically engineered to incorporate expression systems or portions thereof for polynucleotides of the present invention. Polynucleotides may be introduced into host cells by methods described in many standard laboratory manuals, such as Davis et al., Basic Methods in Molecular Biology (1986) and Sambrook *et al. (ibid)*. Preferred methods of introducing polynucleotides into host cells include, for instance, calcium phosphate transfection, DEAE-dextran mediated transfection, transfection, micro-injection, cationic lipid-mediated transfection, electroporation, transduction, scrape loading, ballistic introduction or infection.

Representative examples of appropriate hosts include bacterial cells, such as *Streptococci*, *Staphylococci*, *E. coli*, *Streptomyces* and *Bacillus subtilis* cells; fungal cells, such as yeast cells and *Aspergillus* cells; insect cells such as *Drosophila* S2 and *Spodoptera* Sf9 cells; animal cells such as CHO, COS, HeLa, C127, 3T3, BHK, HEK 293 and Bowes melanoma cells; and plant cells.

A great variety of expression systems can be used, for instance, chromosomal, episomal and virus-derived systems, *e.g.*, vectors derived from bacterial plasmids, from bacteriophage, from transposons, from yeast episomes, from insertion elements, from yeast chromosomal elements, from viruses such as baculoviruses, papova viruses, such as SV40, vaccinia viruses, adenoviruses, fowl pox viruses, pseudorabies viruses and retroviruses, and vectors derived from combinations thereof, such as those derived from plasmid and bacteriophage genetic elements, such as cosmids and phagemids. The expression systems may contain control regions that regulate as well as engender expression. Generally, any system or vector that is able to maintain, propagate or express a polynucleotide to produce a

polypeptide in a host may be used. The appropriate polynucleotide sequence may be inserted into an expression system by any of a variety of well-known and routine techniques, such as, for example, those set forth in Sambrook *et al.*, (*ibid*). Appropriate secretion signals may be incorporated into the desired polypeptide to allow secretion of the translated protein into the lumen of the endoplasmic reticulum, the periplasmic space or the extracellular environment. These signals may be endogenous to the polypeptide or they may be heterologous signals.

If a polypeptide of the present invention is to be expressed for use in screening assays, it is generally preferred that the polypeptide be produced at the surface of the cell. In this event, the cells may be harvested prior to use in the screening assay. If the polypeptide is secreted into the medium, the medium can be recovered in order to recover and purify the polypeptide. If produced intracellularly, the cells must first be lysed before the polypeptide is recovered.

Polypeptides of the present invention can be recovered and purified from recombinant cell cultures by well-known methods including ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography is employed for purification. Well known techniques for refolding proteins may be employed to regenerate active conformation when the polypeptide is denatured during intracellular synthesis, isolation and/or purification.

Polynucleotides of the present invention may be used as diagnostic reagents, through detecting mutations in the associated gene. Detection of a mutated form of a gene is characterized by the polynucleotides set forth in the Sequence Listing in the cDNA or genomic sequence and which is associated with a dysfunction. Will provide a diagnostic tool that can add to, or define, a diagnosis of a disease, or susceptibility to a disease, which results from under-expression, over-expression or altered spatial or temporal expression of the gene. Individuals carrying mutations in the gene may be detected at the DNA level by a variety of techniques well known in the art.

Nucleic acids for diagnosis may be obtained from a subject's cells, such as from blood, urine, saliva, tissue biopsy or autopsy material. The genomic DNA may be used directly for detection or it may be amplified enzymatically by using PCR, preferably RT-PCR, or other amplification techniques prior to analysis. RNA or cDNA may also be used in similar fashion. Deletions and insertions can be detected by a change in size of the amplified product in comparison to the normal genotype. Point mutations can be identified

by hybridizing amplified DNA to labeled nucleotide sequences of the genes set forth in Table I. Perfectly matched sequences can be distinguished from mismatched duplexes by RNase digestion or by differences in melting temperatures. DNA sequence difference may also be detected by alterations in the electrophoretic mobility of DNA fragments in gels, with or without denaturing agents, or by direct DNA sequencing (see, for instance, Myers *et al.*, Science (1985) 230:1242). Sequence changes at specific locations may also be revealed by nuclease protection assays, such as RNase and S1 protection or the chemical cleavage method (see Cotton *et al.*, Proc Natl Acad Sci USA (1985) 85: 4397-4401).

An array of oligonucleotides probes comprising polynucleotide sequences or fragments thereof of the genes set forth in Table I can be constructed to conduct efficient screening of *e.g.*, genetic mutations. Such arrays are preferably high density arrays or grids. Array technology methods are well known and have general applicability and can be used to address a variety of questions in molecular genetics including gene expression, genetic linkage, and genetic variability, see, for example, M. Chee *et al.*, Science, 274, 610-613 (1996) and other references cited therein.

Detection of abnormally decreased or increased levels of polypeptide or mRNA expression may also be used for diagnosing or determining susceptibility of a subject to a disease of the invention. Decreased or increased expression can be measured at the RNA level using any of the methods well known in the art for the quantitation of polynucleotides, such as, for example, nucleic acid amplification, for instance PCR, RT-PCR, RNase protection, Northern blotting and other hybridization methods. Assay techniques that can be used to determine levels of a protein, such as a polypeptide of the present invention, in a sample derived from a host are well-known to those of skill in the art. Such assay methods include radio-immunoassays, competitive-binding assays, Western Blot analysis and ELISA assays.

Thus in another aspect, the present invention relates to a diagnostic kit comprising:

- (a) a polynucleotide of the present invention, preferably the nucleotide sequence set forth in the Sequence Listing, or a fragment or an RNA transcript thereof;
- (b) a nucleotide sequence complementary to that of (a);
- (c) a polypeptide of the present invention, preferably the polypeptide set forth in the Sequence Listing or a fragment thereof; or
- (d) an antibody to a polypeptide of the present invention, preferably to the polypeptide set forth in the Sequence Listing.

It will be appreciated that in any such kit, (a), (b), (c) or (d) may comprise a substantial component. Such a kit will be of use in diagnosing a disease or susceptibility to a disease, particularly diseases of the invention, amongst others.

The polynucleotide sequences of the present invention are valuable for chromosome localisation studies. The sequences set forth in the Sequence Listing are specifically targeted to, and can hybridize with, a particular location on an individual human chromosome. The mapping of relevant sequences to chromosomes according to the present invention is an important first step in correlating those sequences with gene associated disease. Once a sequence has been mapped to a precise chromosomal location, the physical position of the sequence on the chromosome can be correlated with genetic map data. Such data are found in, for example, V. McKusick, Mendelian Inheritance in Man (available on-line through Johns Hopkins University Welch Medical Library). The relationship between genes and diseases that have been mapped to the same chromosomal region are then identified through linkage analysis (co-inheritance of physically adjacent genes). Precise human chromosomal localisations for a genomic sequence (gene fragment etc.) can be determined using Radiation Hybrid (RH) Mapping (Walter, M. Spillett, D., Thomas, P., Weissenbach, J., and Goodfellow, P., (1994) A method for constructing radiation hybrid maps of whole genomes, *Nature Genetics* 7, 22-28). A number of RH panels are available from Research Genetics (Huntsville, AL, USA) e.g. the GeneBridge4 RH panel (*Hum Mol Genet* 1996 Mar;5(3):339-46 A radiation hybrid map of the human genome. Gyapay G, Schmitt K, Fizames C, Jones H, Vega-Czarny N, Spillett D, Muselet D, Prud'Homme JF, Dib C, Auffray C, Morissette J, Weissenbach J, Goodfellow PN). To determine the chromosomal location of a gene using this panel, 93 PCRs are performed using primers designed from the gene of interest on RH DNAs. Each of these DNAs contains random human genomic fragments maintained in a hamster background (human / hamster hybrid cell lines). These PCRs result in 93 scores indicating the presence or absence of the PCR product of the gene of interest. These scores are compared with scores created using PCR products from genomic sequences of known location. This comparison is conducted at <http://www.genome.wi.mit.edu/>.

The polynucleotide sequences of the present invention are also valuable tools for tissue expression studies. Such studies allow the determination of expression patterns of polynucleotides of the present invention which may give an indication as to the expression patterns of the encoded polypeptides in tissues, by detecting the mRNAs that encode them. The techniques used are well known in the art and include in situ hybridization techniques to clones arrayed on a grid, such as cDNA microarray hybridization (Schena *et al*, *Science*, 270, 467-470, 1995 and Shalon *et al*, *Genome Res*, 6, 639-645, 1996) and nucleotide amplification techniques such as PCR. A preferred method uses the TAQMAN (Trade mark) technology available from Perkin Elmer. Results from these studies can provide an

indication of the normal function of the polypeptide in the organism. In addition, comparative studies of the normal expression pattern of mRNAs with that of mRNAs encoded by an alternative form of the same gene (for example, one having an alteration in polypeptide coding potential or a regulatory mutation) can provide valuable insights into the role of the polypeptides of the present invention, or that of inappropriate expression thereof in disease. Such inappropriate expression may be of a temporal, spatial or simply quantitative nature.

A further aspect of the present invention relates to antibodies. The polypeptides of the invention or their fragments, or cells expressing them, can be used as immunogens to produce antibodies that are immunospecific for polypeptides of the present invention. The term "immunospecific" means that the antibodies have substantially greater affinity for the polypeptides of the invention than their affinity for other related polypeptides in the prior art.

Antibodies generated against polypeptides of the present invention may be obtained by administering the polypeptides or epitope-bearing fragments, or cells to an animal, preferably a non-human animal, using routine protocols. For preparation of monoclonal antibodies, any technique which provides antibodies produced by continuous cell line cultures can be used. Examples include the hybridoma technique (Kohler, G. and Milstein, C., *Nature* (1975) 256:495-497), the trioma technique, the human B-cell hybridoma technique (Kozbor *et al.*, *Immunology Today* (1983) 4:72) and the EBV-hybridoma technique (Cole *et al.*, *Monoclonal Antibodies and Cancer Therapy*, 77-96, Alan R. Liss, Inc., 1985).

Techniques for the production of single chain antibodies, such as those described in U.S. Patent No. 4,946,778, can also be adapted to produce single chain antibodies to polypeptides of this invention. Also, transgenic mice, or other organisms, including other mammals, may be used to express humanized antibodies.

The above-described antibodies may be employed to isolate or to identify clones expressing the polypeptide or to purify the polypeptides by affinity chromatography. Antibodies against polypeptides of the present invention may also be employed to treat diseases of the invention, amongst others.

Polypeptides and polynucleotides of the present invention may also be used as vaccines. Accordingly, in a further aspect, the present invention relates to a method for inducing an immunological response in a mammal that comprises inoculating the mammal with a polypeptide of the present invention, adequate to produce antibody and/or T cell immune response, including, for example, cytokine-producing T cells or cytotoxic T cells,

to protect said animal from disease, whether that disease is already established within the individual or not. An immunological response in a mammal may also be induced by a method comprises delivering a polypeptide of the present invention *via* a vector directing expression of the polynucleotide and coding for the polypeptide *in vivo* in order to induce
5 such an immunological response to produce antibody to protect said animal from diseases of the invention. One way of administering the vector is by accelerating it into the desired cells as a coating on particles or otherwise. Such nucleic acid vector may comprise DNA, RNA, a modified nucleic acid, or a DNA/RNA hybrid. For use a vaccine, a polypeptide or a nucleic acid vector will be normally provided as a vaccine formulation (composition). The
10 formulation may further comprise a suitable carrier. Since a polypeptide may be broken down in the stomach, it is preferably administered parenterally (for instance, subcutaneous, intra-muscular, intravenous, or intra-dermal injection). Formulations suitable for parenteral administration include aqueous and non-aqueous sterile injection solutions that may contain anti-oxidants, buffers, bacteriostats and solutes that render the formulation isotonic with the
15 blood of the recipient; and aqueous and non-aqueous sterile suspensions that may include suspending agents or thickening agents. The formulations may be presented in unit-dose or multi-dose containers, for example, sealed ampoules and vials and may be stored in a freeze-dried condition requiring only the addition of the sterile liquid carrier immediately prior to use. The vaccine formulation may also include adjuvant systems for enhancing the
20 immunogenicity of the formulation, such as oil-in water systems and other systems known in the art. The dosage will depend on the specific activity of the vaccine and can be readily determined by routine experimentation.

Polypeptides of the present invention have one or more biological functions that are of relevance in one or more disease states, in particular the diseases of the invention
25 hereinbefore mentioned. It is therefore useful to identify compounds that stimulate or inhibit the function or level of the polypeptide. Accordingly, in a further aspect, the present invention provides for a method of screening compounds to identify those that stimulate or inhibit the function or level of the polypeptide. Such methods identify agonists or antagonists that may be employed for therapeutic and prophylactic purposes for such
30 diseases of the invention as hereinbefore mentioned. Compounds may be identified from a variety of sources, for example, cells, cell-free preparations, chemical libraries, collections of chemical compounds, and natural product mixtures. Such agonists or antagonists so-identified may be natural or modified substrates, ligands, receptors, enzymes, etc., as the case may be, of the polypeptide; a structural or functional mimetic thereof (see Coligan *et al.*, Current Protocols in Immunology 1(2):Chapter 5 (1991)) or a small molecule. Such
35

small molecules preferably have a molecular weight below 2,000 daltons, more preferably between 300 and 1,000 daltons, and most preferably between 400 and 700 daltons. It is preferred that these small molecules are organic molecules.

The screening method may simply measure the binding of a candidate compound to the polypeptide, or to cells or membranes bearing the polypeptide, or a fusion protein thereof, by means of a label directly or indirectly associated with the candidate compound. Alternatively, the screening method may involve measuring or detecting (qualitatively or quantitatively) the competitive binding of a candidate compound to the polypeptide against a labeled competitor (*e.g.* agonist or antagonist). Further, these screening methods may test whether the candidate compound results in a signal generated by activation or inhibition of the polypeptide, using detection systems appropriate to the cells bearing the polypeptide. Inhibitors of activation are generally assayed in the presence of a known agonist and the effect on activation by the agonist by the presence of the candidate compound is observed. Further, the screening methods may simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide of the present invention, to form a mixture, measuring an activity of the genes set forth in Table I in the mixture, and comparing activity of the mixture of the genes set forth in Table I to a control mixture which contains no candidate compound.

Polypeptides of the present invention may be employed in conventional low capacity screening methods and also in high-throughput screening (HTS) formats. Such HTS formats include not only the well-established use of 96- and, more recently, 384-well micotiter plates but also emerging methods such as the nanowell method described by Schullek *et al.*, *Anal Biochem.*, 246, 20-29, (1997).

Fusion proteins, such as those made from Fc portion and polypeptide of the genes set forth in Table I, as hereinbefore described, can also be used for high-throughput screening assays to identify antagonists for the polypeptide of the present invention (see D. Bennett *et al.*, *J Mol Recognition*, 8:52-58 (1995); and K. Johanson *et al.*, *J Biol Chem*, 270(16):9459-9471 (1995)).

The polynucleotides, polypeptides and antibodies to the polypeptide of the present invention may also be used to configure screening methods for detecting the effect of added compounds on the production of mRNA and polypeptide in cells. For example, an ELISA assay may be constructed for measuring secreted or cell associated levels of polypeptide using monoclonal and polyclonal antibodies by standard methods known in the art. This can be used to discover agents that may inhibit or enhance the production of polypeptide (also called antagonist or agonist, respectively) from suitably manipulated cells or tissues.

A polypeptide of the present invention may be used to identify membrane bound or soluble receptors, if any, through standard receptor binding techniques known in the art. These include, but are not limited to, ligand binding and crosslinking assays in which the polypeptide is labeled with a radioactive isotope (for instance, ^{125}I), chemically modified (for instance, biotinylated), or fused to a peptide sequence suitable for detection or purification, and incubated with a source of the putative receptor (cells, cell membranes, cell supernatants, tissue extracts, bodily fluids). Other methods include biophysical techniques such as surface plasmon resonance and spectroscopy. These screening methods may also be used to identify agonists and antagonists of the polypeptide that compete with the binding of the polypeptide to its receptors, if any. Standard methods for conducting such assays are well understood in the art.

Examples of antagonists of polypeptides of the present invention include antibodies or, in some cases, oligonucleotides or proteins that are closely related to the ligands, substrates, receptors, enzymes, etc., as the case may be, of the polypeptide, *e.g.*, a fragment of the ligands, substrates, receptors, enzymes, etc.; or a small molecule that bind to the polypeptide of the present invention but do not elicit a response, so that the activity of the polypeptide is prevented.

Screening methods may also involve the use of transgenic technology and the genes set forth in Table I. The art of constructing transgenic animals is well established. For example, the genes set forth in Table I may be introduced through microinjection into the male pronucleus of fertilized oocytes, retroviral transfer into pre- or post-implantation embryos, or injection of genetically modified, such as by electroporation, embryonic stem cells into host blastocysts. Particularly useful transgenic animals are so-called "knock-in" animals in which an animal gene is replaced by the human equivalent within the genome of that animal. Knock-in transgenic animals are useful in the drug discovery process, for target validation, where the compound is specific for the human target. Other useful transgenic animals are so-called "knock-out" animals in which the expression of the animal ortholog of a polypeptide of the present invention and encoded by an endogenous DNA sequence in a cell is partially or completely annulled. The gene knock-out may be targeted to specific cells or tissues, may occur only in certain cells or tissues as a consequence of the limitations of the technology, or may occur in all, or substantially all, cells in the animal. Transgenic animal technology also offers a whole animal expression-cloning system in which introduced genes are expressed to give large amounts of polypeptides of the present invention

Screening kits for use in the above described methods form a further aspect of the present invention. Such screening kits comprise:

- (a) a polypeptide of the present invention;
- (b) a recombinant cell expressing a polypeptide of the present invention;
- 5 (c) a cell membrane expressing a polypeptide of the present invention; or
- (d) an antibody to a polypeptide of the present invention;

which polypeptide is preferably that set forth in the Sequence Listing.

It will be appreciated that in any such kit, (a), (b), (c) or (d) may comprise a substantial component.

10

Glossary

The following definitions are provided to facilitate understanding of certain terms used frequently hereinbefore.

“Antibodies” as used herein includes polyclonal and monoclonal antibodies, chimeric,
15 single chain, and humanized antibodies, as well as Fab fragments, including the products of an

Fab or other immunoglobulin expression library.

“Isolated” means altered “by the hand of man” from its natural state, *i.e.*, if it occurs in nature, it has been changed or removed from its original environment, or both. For
20 example, a polynucleotide or a polypeptide naturally present in a living organism is not “isolated,” but the same polynucleotide or polypeptide separated from the coexisting materials of its natural state is “isolated”, as the term is employed herein. Moreover, a polynucleotide or polypeptide that is introduced into an organism by transformation, genetic manipulation or by any other recombinant method is “isolated” even if it is still present in
25 said organism, which organism may be living or non-living.

“Secreted protein activity or secreted polypeptide activity” or “biological activity of the secreted protein or secreted polypeptide” refers to the metabolic or physiologic function of said secreted protein including similar activities or improved activities or these activities with decreased undesirable side-effects. Also included are antigenic and immunogenic
30 activities of said secreted protein.

“Secreted protein gene” refers to a polynucleotide comprising any of the attached nucleotide sequences or allelic variants thereof and/or their complements.

“Polynucleotide” generally refers to any polyribonucleotide (RNA) or polydeoxribonucleotide (DNA), which may be unmodified or modified RNA or DNA.

35 “Polynucleotides” include, without limitation, single- and double-stranded DNA, DNA that

is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, "polynucleotide" refers to triple-
5 stranded regions comprising RNA or DNA or both RNA and DNA. The term "polynucleotide" also includes DNAs or RNAs containing one or more modified bases and DNAs or RNAs with backbones modified for stability or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications may be made to DNA and RNA; thus, "polynucleotide" embraces chemically,
10 enzymatically or metabolically modified forms of polynucleotides as typically found in nature, as well as the chemical forms of DNA and RNA characteristic of viruses and cells. "Polynucleotide" also embraces relatively short polynucleotides, often referred to as oligonucleotides.

"Polypeptide" refers to any polypeptide comprising two or more amino acids joined
15 to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres. "Polypeptide" refers to both short chains, commonly referred to as peptides, oligopeptides or oligomers, and to longer chains, generally referred to as proteins. Polypeptides may contain amino acids other than the 20 gene-encoded amino acids. "Polypeptides" include amino acid sequences modified either by natural processes, such as post-translational
20 processing, or by chemical modification techniques that are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications may occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present to the
25 same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched and branched cyclic polypeptides may result from post-translation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-
30 ribosylation, amidation, biotinylation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cystine, formation of pyroglutamate, formylation, gamma-carboxylation,
35 glycosylation, GPI anchor formation, hydroxylation, iodination, methylation,

myristoylation, oxidation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination (see, for instance, *Proteins - Structure and Molecular Properties*, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York, 1993; Wold, F., *Post-translational Protein Modifications: Perspectives and Prospects*, 1-12, in *Post-translational Covalent Modification of Proteins*, B. C. Johnson, Ed., Academic Press, New York, 1983; Seifter *et al.*, "Analysis for protein modifications and nonprotein cofactors", *Meth Enzymol*, 182, 626-646, 1990, and Rattan *et al.*, "Protein Synthesis: Post-translational Modifications and Aging", *Ann NY Acad Sci*, 663, 48-62, 1992).

"Fragment" of a polypeptide sequence refers to a polypeptide sequence that is shorter than the reference sequence but that retains essentially the same biological function or activity as the reference polypeptide. "Fragment" of a polynucleotide sequence refers to a polynucleotide sequence that is shorter than the reference sequence set forth in the Sequence Listing.

"Variant" refers to a polynucleotide or polypeptide that differs from a reference polynucleotide or polypeptide, but retains the essential properties thereof. A typical variant of a polynucleotide differs in nucleotide sequence from the reference polynucleotide. Changes in the nucleotide sequence of the variant may or may not alter the amino acid sequence of a polypeptide encoded by the reference polynucleotide. Nucleotide changes may result in amino acid substitutions, additions, deletions, fusions and truncations in the polypeptide encoded by the reference sequence, as discussed below. A typical variant of a polypeptide differs in amino acid sequence from the reference polypeptide. Generally, alterations are limited so that the sequences of the reference polypeptide and the variant are closely similar overall and, in many regions, identical. A variant and reference polypeptide may differ in amino acid sequence by one or more substitutions, insertions, deletions in any combination. A substituted or inserted amino acid residue may or may not be one encoded by the genetic code. Typical conservative substitutions include Gly, Ala; Val, Ile, Leu; Asp, Glu; Asn, Gln; Ser, Thr; Lys, Arg; and Phe and Tyr. A variant of a polynucleotide or polypeptide may be naturally occurring such as an allele, or it may be a variant that is not known to occur naturally. Non-naturally occurring variants of polynucleotides and polypeptides may be made by mutagenesis techniques or by direct synthesis. Also included as variants are polypeptides having one or more post-translational modifications, for instance glycosylation, phosphorylation, methylation, ADP ribosylation and the like. Embodiments include methylation of the N-terminal amino acid, phosphorylations of serines and threonines and modification of C-terminal glycines.

"Allele" refers to one of two or more alternative forms of a gene occurring at a given locus in the genome.

"Polymorphism" refers to a variation in nucleotide sequence (and encoded polypeptide sequence, if relevant) at a given position in the genome within a population.

5 "Single Nucleotide Polymorphism" (SNP) refers to the occurrence of nucleotide variability at a single nucleotide position in the genome, within a population. An SNP may occur within a gene or within intergenic regions of the genome. SNPs can be assayed using Allele Specific Amplification (ASA). For the process at least 3 primers are required. A common primer is used in reverse complement to the polymorphism being assayed. This
10 common primer can be between 50 and 1500 bps from the polymorphic base. The other two (or more) primers are identical to each other except that the final 3' base wobbles to match one of the two (or more) alleles that make up the polymorphism. Two (or more) PCR reactions are then conducted on sample DNA, each using the common primer and one of the Allele Specific Primers.

15 "Splice Variant" as used herein refers to cDNA molecules produced from RNA molecules initially transcribed from the same genomic DNA sequence but which have undergone alternative RNA splicing. Alternative RNA splicing occurs when a primary RNA transcript undergoes splicing, generally for the removal of introns, which results in the production of more than one mRNA molecule each of that may encode different amino acid
20 sequences. The term splice variant also refers to the proteins encoded by the above cDNA molecules.

"Identity" reflects a relationship between two or more polypeptide sequences or two or more polynucleotide sequences, determined by comparing the sequences. In general, identity refers to an exact nucleotide to nucleotide or amino acid to amino acid
25 correspondence of the two polynucleotide or two polypeptide sequences, respectively, over the length of the sequences being compared.

"% Identity" - For sequences where there is not an exact correspondence, a "% identity" may be determined. In general, the two sequences to be compared are aligned to give a maximum correlation between the sequences. This may include inserting "gaps" in
30 either one or both sequences, to enhance the degree of alignment. A % identity may be determined over the whole length of each of the sequences being compared (so-called global alignment), that is particularly suitable for sequences of the same or very similar length, or over shorter, defined lengths (so-called local alignment), that is more suitable for sequences of unequal length.

"Similarity" is a further, more sophisticated measure of the relationship between two polypeptide sequences. In general, "similarity" means a comparison between the amino acids of two polypeptide chains, on a residue by residue basis, taking into account not only exact correspondences between a between pairs of residues, one from each of the sequences
5 being compared (as for identity) but also, where there is not an exact correspondence, whether, on an evolutionary basis, one residue is a likely substitute for the other. This likelihood has an associated "score" from which the "% similarity" of the two sequences can then be determined.

Methods for comparing the identity and similarity of two or more sequences are
10 well known in the art. Thus for instance, programs available in the Wisconsin Sequence Analysis Package, version 9.1 (Devereux J et al, Nucleic Acids Res, 12, 387-395, 1984, available from Genetics Computer Group, Madison, Wisconsin, USA), for example the programs BESTFIT and GAP, may be used to determine the % identity between two polynucleotides and the % identity and the % similarity between two polypeptide sequences.
15 BESTFIT uses the "local homology" algorithm of Smith and Waterman (J Mol Biol, 147,195-197, 1981, Advances in Applied Mathematics, 2, 482-489, 1981) and finds the best single region of similarity between two sequences. BESTFIT is more suited to comparing two polynucleotide or two polypeptide sequences that are dissimilar in length, the program assuming that the shorter sequence represents a portion of the longer. In comparison, GAP
20 aligns two sequences, finding a "maximum similarity", according to the algorithm of Needleman and Wunsch (J Mol Biol, 48, 443-453, 1970). GAP is more suited to comparing sequences that are approximately the same length and an alignment is expected over the entire length. Preferably, the parameters "Gap Weight" and "Length Weight" used in each program are 50 and 3, for polynucleotide sequences and 12 and 4 for polypeptide sequences,
25 respectively. Preferably, % identities and similarities are determined when the two sequences being compared are optimally aligned.

Other programs for determining identity and/or similarity between sequences are also known in the art, for instance the BLAST family of programs (Altschul S F et al, J Mol Biol, 215, 403-410, 1990, Altschul S F et al, Nucleic Acids Res., 25:389-3402, 1997,
30 available from the National Center for Biotechnology Information (NCBI), Bethesda, Maryland, USA and accessible through the home page of the NCBI at www.ncbi.nlm.nih.gov) and FASTA (Pearson W R, Methods in Enzymology, 183, 63-99, 1990; Pearson W R and Lipman D J, Proc Nat Acad Sci USA, 85, 2444-2448, 1988, available as part of the Wisconsin Sequence Analysis Package).

Preferably, the BLOSUM62 amino acid substitution matrix (Henikoff S and Henikoff J G, Proc. Nat. Acad Sci. USA, 89, 10915-10919, 1992) is used in polypeptide sequence comparisons including where nucleotide sequences are first translated into amino acid sequences before comparison.

- 5 Preferably, the program BESTFIT is used to determine the % identity of a query polynucleotide or a polypeptide sequence with respect to a reference polynucleotide or a polypeptide sequence, the query and the reference sequence being optimally aligned and the parameters of the program set at the default value, as hereinbefore described.

- "Identity Index" is a measure of sequence relatedness which may be used to
10 compare a candidate sequence (polynucleotide or polypeptide) and a reference sequence. Thus, for instance, a candidate polynucleotide sequence having, for example, an Identity Index of 0.95 compared to a reference polynucleotide sequence is identical to the reference sequence except that the candidate polynucleotide sequence may include on average up to five differences per each 100 nucleotides of the reference sequence. Such differences are
15 selected from the group consisting of at least one nucleotide deletion, substitution, including transition and transversion, or insertion. These differences may occur at the 5' or 3' terminal positions of the reference polynucleotide sequence or anywhere between these terminal positions, interspersed either individually among the nucleotides in the reference sequence or in one or more contiguous groups within the reference sequence. In other words, to
20 obtain a polynucleotide sequence having an Identity Index of 0.95 compared to a reference polynucleotide sequence, an average of up to 5 in every 100 of the nucleotides of the in the reference sequence may be deleted, substituted or inserted, or any combination thereof, as hereinbefore described. The same applies *mutatis mutandis* for other values of the Identity Index, for instance 0.96, 0.97, 0.98 and 0.99.

- 25 Similarly, for a polypeptide, a candidate polypeptide sequence having, for example, an Identity Index of 0.95 compared to a reference polypeptide sequence is identical to the reference sequence except that the polypeptide sequence may include an average of up to five differences per each 100 amino acids of the reference sequence. Such differences are selected from the group consisting of at least one amino acid deletion, substitution,
30 including conservative and non-conservative substitution, or insertion. These differences may occur at the amino- or carboxy-terminal positions of the reference polypeptide sequence or anywhere between these terminal positions, interspersed either individually among the amino acids in the reference sequence or in one or more contiguous groups within the reference sequence. In other words, to obtain a polypeptide sequence having an
35 Identity Index of 0.95 compared to a reference polypeptide sequence, an average of up to 5

in every 100 of the amino acids in the reference sequence may be deleted, substituted or inserted, or any combination thereof, as hereinbefore described. The same applies *mutatis mutandis* for other values of the Identity Index, for instance 0.96, 0.97, 0.98 and 0.99.

The relationship between the number of nucleotide or amino acid differences and the Identity Index may be expressed in the following equation:

$$n_a \leq x_a - (x_a \cdot I),$$

in which:

n_a is the number of nucleotide or amino acid differences,

x_a is the total number of nucleotides or amino acids in a sequence set forth in the

Sequence Listing,

I is the Identity Index,

\cdot is the symbol for the multiplication operator, and

in which any non-integer product of x_a and I is rounded down to the nearest integer prior to subtracting it from x_a .

"Homolog" is a generic term used in the art to indicate a polynucleotide or polypeptide sequence possessing a high degree of sequence relatedness to a reference sequence. Such relatedness may be quantified by determining the degree of identity and/or similarity between the two sequences as hereinbefore defined. Falling within this generic term are the terms "ortholog", and "paralog". "Ortholog" refers to a polynucleotide or polypeptide that is the functional equivalent of the polynucleotide or polypeptide in another species. "Paralog" refers to a polynucleotide or polypeptide that within the same species which is functionally similar.

"Fusion protein" refers to a protein encoded by two, often unrelated, fused genes or fragments thereof. In one example, EP-A-0 464 533-A discloses fusion proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, employing an immunoglobulin Fc region as a part of a fusion protein is advantageous for use in therapy and diagnosis resulting in, for example, improved pharmacokinetic properties [see, e.g., EP-A 0232 262]. On the other hand, for some uses it would be desirable to be able to delete the Fc part after the fusion protein has been expressed, detected and purified.

All publications and references, including but not limited to patents and patent applications, cited in this specification are herein incorporated by reference in their entirety as if each individual publication or reference were specifically and individually indicated to be incorporated by reference herein as being fully set forth. Any patent application to which

this application claims priority is also incorporated by reference herein in its entirety in the manner described above for publications and references.

Table I.

Gene Name	GSK Gene ID	Nucleic Acid SEQ ID NO's	Corresponding Protein SEQ ID NO's
sbg960509cbrectp	960509	SEQ ID NO:1	SEQ ID NO:45
sbg614126complfH	614126	SEQ ID NO:2 SEQ ID NO:3	SEQ ID NO:46 SEQ ID NO:47
sbg120703RNase	120703	SEQ ID NO:4	SEQ ID NO:48
sbg98530TS	98530	SEQ ID NO:5 SEQ ID NO:6	SEQ ID NO:49 SEQ ID NO:50
sbg563917RDP	63917	SEQ ID NO:7 SEQ ID NO:8	SEQ ID NO:51 SEQ ID NO:52
sbg618069LRR	618069	SEQ ID NO:9 SEQ ID NO:10	SEQ ID NO:53 SEQ ID NO:54
sbg934114Relaxin	934114	SEQ ID NO:11	SEQ ID NO:55
sbg99174LOX-like	99174	SEQ ID NO:12	SEQ ID NO:56
sbg995002PIGR	995002	SEQ ID NO:13	SEQ ID NO:57
sbg1033026C1q	1033026	SEQ ID NO:14 SEQ ID NO:15	SEQ ID NO:58 SEQ ID NO:59
sbg1003675RNase	1003675	SEQ ID NO:16	SEQ ID NO:60
sbg1015258PLM	1015258	SEQ ID NO:17	SEQ ID NO:61
sbg1003328IG	1003328	SEQ ID NO:18 SEQ ID NO:19	SEQ ID NO:62 SEQ ID NO:63
sbg1020829SGLT	1020829	SEQ ID NO:20	SEQ ID NO:64
sbg1005450UDPGT	1005450	SEQ ID NO:21 SEQ ID NO:22	SEQ ID NO:65 SEQ ID NO:66
sbg1002620TIa	1002620	SEQ ID NO:23 SEQ ID NO:24	SEQ ID NO:67 SEQ ID NO:68
sbg1002620TIb	1002620	SEQ ID NO:25	SEQ ID NO:69
sbg102200MCTa	102200	SEQ ID NO:26 SEQ ID NO:27	SEQ ID NO:70 SEQ ID NO:71
sbg102200MCTb	102200	SEQ ID NO:28	SEQ ID NO:72
sbg1020380LYG	1020380	SEQ ID NO:29 SEQ ID NO:30	SEQ ID NO:73 SEQ ID NO:74
sbg1007026SGLT	1007026	SEQ ID NO:31	SEQ ID NO:75
sbg1012732GLUT	1012732	SEQ ID NO:32 SEQ ID NO:33	SEQ ID NO:76 SEQ ID NO:77
sbg1012732GLUTb	1012732	SEQ ID NO:34	SEQ ID NO:78
sbg1018172CSP	1018172	SEQ ID NO:35 SEQ ID NO:36	SEQ ID NO:79 SEQ ID NO:80
sbg1004570ERGIC	1004570	SEQ ID NO:37 SEQ ID NO:38	SEQ ID NO:81 SEQ ID NO:82
sbg1016995IGBrectp	1016995	SEQ ID NO:39 SEQ ID NO:40	SEQ ID NO:83 SEQ ID NO:84
sbg1151bSREC	1151	SEQ ID NO:41 SEQ ID NO:42	SEQ ID NO:85 SEQ ID NO:86
sbg1399854ANK	1399854	SEQ ID NO:43 SEQ ID NO:44	SEQ ID NO:87 SEQ ID NO:88

Table II

Gene Name	Gene Family	Closest Polynucleotide by homology	Closest Polypeptide by homology	Cell Localization (by homology)
sbg960509 cbrectp	Carbohydrate-binding receptor	GB:AC007395 Direct submitted (25-APR-1999) Genome Sequencing Center, Washington University School of Medicine, 4444 Forest Park Parkway, St. Louis, MO 63108, USA	Mouse Kupffer cell c-type lectin receptor, gi:7949066 Submitted (25-OCT-1996) to the DDBJ/EMBL/GenBank databases.	Membrane-bound
sbg614126 complfH	Complement factor H	SC:AL353809 Submitted (20-JAN-2001) by Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK.	Human H-factor like 1, gi:11321587 Estaller,C., Koistinen,V., Schwaeble,W., Dierich,M.P., and Weiss,E.H. J. Immunol. 146, 3190-3196 (1991)	Secreted
sbg120703 RNase	RNase	GB:AL157687 Direct Submitted (24-MAY-2000) to the EMBL/GenBank/DDBJ databases by Genoscope.	Human keratinocyte-derived RNase-like protein, geneseq: Y44192 Submitted by INNOGENETICS NV Application number and publication date: EP-943679-A1, 22-SEP-99	Secreted
sbg98530T S	Thrombospondin type I	GB:AC027307 Submitted (30-MAR-2000) Production Sequencing Facility, DOE Joint Genome Institute, 2800 Mitchell Drive, Walnut Creek, CA 94598, USA	Mouse RIKEN cDNA 2010109H09 gene, gi:13385092 The RIKEN Genome Exploration Research Group Phase II Team and FANTOM Consortium. Nature 409, 685-690 (2001)	Secreted
sbg563917 RDP	Renal dipeptidase	GB:AC009077 Directly submitted (03-AUG-1999) by Production Sequencing Facility, DOE Joint Genome Institute, 2800 Mitchell Drive, Walnut Creek, CA 94598, USA	Human putative metallopeptidase (family M19) gi:11641273 Chen,J.M., Fortunato,M. and Barrett, A.J. Submitted (02-NOV-2000) Chen J.M., MRC Molecular Enzymology Laboratory, The Babraham Institute, Babraham, Cambridge, CB2 4AT, UK	Secreted

Table II (cont).

Gene Name	Gene Family	Closest Polynucleotide by homology	Closest Polypeptide by homology	Cell Localization (by homology)
sbg618069 LRR	Leucine-rich repeat	GB:AL589765 Submitted (16-MAR-2001) by Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK.	Macaca fascicularis brain protein, gi: 9651088 Submitted (28-JUL-2000) to the DDBJ/EMBL/GenBank databases. Katsuyuki Hashimoto, National Institute of Infectious Diseases, Division of Genetic Resources; 23-1, Toyama 1-chome, Shinjuku-ku, Tokyo 162-8640, Japan	Membrane-bound
sbg934114 Relaxin	Insulin	JGI:CIT978SKB_5506 Found at Joint Genome Institute DoE/LLNL/LBNL/LANL.	Mouse insulin-like peptide (relaxin/insulin-like protein), gi:7387805 Conklin D, Lofton-Day CE, Haldeman BA, Ching A, Whitmore TE, Lok S, Jaspers S. 1999. Genomics 60:50-56.	Secreted
sbg99174L OX-like	C-type lectin	GB:AL137062 Direct submitted (09-AUG-2000) Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK.	Mouse putative protien, gi: 12855891 The RIKEN Genome Exploration Research Group Phase II Team and FANTOM Consortium. Nature 409, 685-690 (2001)	Membrane-bound
sbg995002 PIGR	Polymeric - immunoglobulin receptor (PIGR)	GB:AC027192 Direct submitted (28-MAR-2000) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA.	Human TANGO 354 protein, geneseq: B66271 Submitted by (MILL-) MILLENNIUM PHARM INC Application number and publication date: WO200100673-A1, 04-JAN-01	Membrane-bound
sbg103302 6C1q	C1q	GB:AL359736 Direct submitted (22-AUG-2000) Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK.	Human adipocyte-specific secretory protein, gi: 4757760 Maeda,K., Okubo,K., Shimomura,I., Funahashi,T., Matsuzawa,Y. and Matsubara,K. Biochem. Biophys. Res. Commun. 221 (2), 286-289 (1996)	Secreted

Table II (cont).

Gene Name	Gene Family	Closest Polynucleotide by homology	Closest Polypeptide by homology	Cell Localization (by homology)
sbg100367 5RNase	RNase	EMBL:CNS01RIH Found at European Molecular Biology Laboratory.	Chinchilla brevicaudata pancreatic ribonuclease, gi:133205 Van Den Berg A, Van Den Hende-Timmer L, Beintema JJ. 1976. Biochim Biophys Acta 453:400-9.	Secreted
sbg101525 8PLM	Phospholemmman (PLM)	GB:AL022345 Direct submitted (10-DEC-1999) by Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK.	Human phospholemmman-like protein, geneseq:W51104 Submitted by (HUMA-) HUMAN GENOME SCI INC Application number and publication date: WO9839448-A2, 11-SEP-98	Membrane-bound
sbg100332 8IG	Immunoglobulin	EMBL:HSBA536C5 Found at European Molecular Biology Laboratory.	Human immune system molecule, geneseq:B15536 Submitted by (INCY-) INCYTE PHARM INC Application number and publication date: WO200060080-A2, 12-OCT-00	Membrane-bound
sbg102082 9SGLT	Na ⁺ /glucose cotransporter	GB:AJ009617 Directly submitted (17-JUL-1998) by MPIMG, Abt.Lehrach, Max Planck Institut fuer Molekulare Genetik, Ihnestrassse 73, Berlin, 14195, Germany.	Oryctolagus cuniculus Na ⁺ /glucose cotransporters, gi:520469 Pajor,A.M. 1994 Biochim. Biophys. Acta 1194 (2), 349-51.	Membrane-bound
sbg100545 0UDPGT	UDP-glucuronosyltransferase(UDPGT)	GB:AC016612 Submitted (04-DEC-1999) Production Sequencing Facility, DOE Joint Genome Institute, 2800 Mitchell Drive, Walnut Creek, CA 94598, USA	Human PRO1780 protein , geneseq: B24025 Submitted by GENENTECH INC Application number and publication date: WO200053750-A1, 14-SEP-00	Membrane-bound
sbg100262 0TIa	Cysteine-rich secretory protein (CRISP) trypsin inhibitor	GB:AC025280 Submitted (08-MAR-2000) by Production Sequencing Facility, DOE Joint Genome Institute, 2800 Mitchell Drive, Walnut Creek, CA 94598, USA	Human hypothetical protein DKFZp434B044, gi: 13899332 Wiemann,S., Weil,B. et al. Genome Res. 11 (3), 422-435 (2001)	Secreted

Table II (cont).

Gene Name	Gene Family	Closest Polynucleotide by homology	Closest Polypeptide by homology	Cell Localization (by homology)
sbg100262 OTIb	Cysteine-rich secretory protein (CRISP) trypsin inhibitor	GB:AC025280 Submitted (08-MAR-2000) by Production Sequencing Facility, DOE Joint Genome Institute, 2800 Mitchell Drive, Walnut Creek, CA 94598, USA	Rat late gestation lung protein 1, gi:4324682 Kaplan,F., Ledoux,P., Kassamali,F.Q., Gagnon,S., Post,M., Koehler,D., Deimling,J. and Swezey,N.B. Am. J. Physiol. 276 (6), L1027-L1036 (1999)	Secreted
sbg102200 MCTa	Monocarboxylate cotransporter (MCT1)	GB: AC015918 Directly submitted (17-NOV-1999) by Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA.	Mouse unnamed protein product, gi:7670446 Submitted (12-APR-2000) to the DDBJ/EMBL/GenBank databases by Katsuyuki Hashimoto, National Institute of Infectious Diseases, Division of Genetic Resources; 23-1, Toyama 1-chome, Shinjuku-ku, Tokyo 162-8640, Japan	Membrane-bound
sbg102200 MCTb	Monocarboxylate cotransporter (MCT1)	GB: AC015918 Directly submitted (17-NOV-1999) by Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA.	Human solute carrier 16 (monocarboxylic acid transporters), member 8, gi:13655082 Submitted (17-APR-2001) by National Center for Biotechnology Information, NIH, Bethesda, MD 20894, USA	Membrane-bound
sbg102038 OLYG	Goose-type lysozyme G	GB:AC023965 Directly submitted (20-FEB-2000) by Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141, USA	Lysozyme G (1,4-beta-N-acetylmuramidase E) (Goose-type lysozyme). gi:126634 Schoentgen, F., Jolles,J. and Jolles, P. Eur. J. Biochem. 123 (3), 489-497 (1982)	Secreted
sbg100702 6SGLT	Sodium-glucose cotransporter	GB:AC046167 Direct submitted (13-APR-2000) Whitehead Institute/MIT Center for Genome Research, 320 Charles Street, Cambridge, MA 02141.	Human transport protein TPPT-13, geneseqp: B60093 Submitted by INCYTE GENOMICS INC Application number and publication date: WO200078953-A2, 28-DEC-00	Membrane-bound

Table II (cont).

Gene Name	Gene Family	Closest Polynucleotide by homology	Closest Polypeptide by homology	Cell Localization (by homology)
sbg101273 2GLUT	Glucose transporter	GB:AP000350 Direct submitted (10-JUN-1999) to the DDBJ/EMBL/GenBank databases. Nobuyoshi Shimizu, Keio university, school of medicine, Molecular Biology; 35 Shinanomachi, Shinjuku, Tokyo 160-0016, Japan.	Human glucose transporter GLUT10, gi:13540598 Submitted (10-FEB-2000) Joost H.G., Institute of Pharmacology and Toxicology, Medical Faculty, Technical University of Aachen, Wendlingweg 2, Aachen, D-52057, GERMANY	Membrane-bound
sbg101273 2GLUTb	Glucose transporter	GB:AP000350 Direct submitted (10-JUN-1999) to the DDBJ/EMBL/GenBank databases. Nobuyoshi Shimizu, Keio university, school of medicine, Molecular Biology; 35 Shinanomachi, Shinjuku, Tokyo 160-0016, Japan.	Human glucose transporter GLUT10, gi:13540598 Submitted (10-FEB-2000) Joost H.G., Institute of Pharmacology and Toxicology, Medical Faculty, Technical University of Aachen, Wendlingweg 2, Aachen, D-52057, GERMANY	Membrane-bound
sbg101817 2CSP	Chondroitin sulfate proteoglycan	EMBL:AL354819, and SC:AL590007. Submitted (30-APR-2001 and 04-MAY-2001) by Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK. EMBL:AC017111, Submitted (09-DEC-1999) Genome Sequencing Center, Washington University School of Medicine, 4444 Forest Park Parkway, St. Louis, MO 63108, USA	Lytechinus variegatus embryonic blastocoelar extracellular matrix protein, gi:9837426 Submitted (14-JUL-2000) Biological Sciences, Carnegie Mellon University, 4400 Fifth Ave, Pittsburgh, PA 15213, USA	Secreted
sbg100457 OERGIC	ER-Golgi intermediate compartment protein	GB:AC020705 Submitted (08-JAN-2000) Genome Sequencing Center, Washington University School of Medicine, 4444 Forest Park Parkway, St. Louis, MO 63108, USA	Human ERGL protein, gi:11141891 Submitted (06-SEP-2000) Laboratory of Molecular Biology, NCI, NIH, 37 Convent Dr., Bldg. 37, Rm. 4B20, Bethesda, MD 20892, USA	Membrane-bound

Table II (cont).

Gene Name	Gene Family	Closest Polynucleotide by homology	Closest Polypeptide by homology	Cell Localization (by homology)
sbg101699 5IGBrecpt	Immunoglobulin receptor	GB:AL353721 Submitted (07-JUL-2001) Sanger Centre, Hinxton, Cambridgeshire, CB10 1SA, UK.	Human immunoglobulin superfamily receptor translocation associated 1, gi:14550416 Hatzivassiliou,G., Miller,I.J., Takizawa,J., et al. Immunity 14 (3), 277-289 (2001)	Membrane-bound
sbg1151bS REC	EGF-like LDL receptor protein	GB:AC005500 Chen,F., D.L., Do,T., Dumanski,J.P. and Roe,B.A. Direct submission (31-MAY-01) Department Of Chemistry and Biochemistry, The University Of Oklahoma, 620 Parrington Oval, Room 208, Norman, OK 73019, USA	Human nurse cell receptor B6TNC#10b, geneseq: B60395 Submitted by (SHIO) SHIONOGI & CO LTD Application number and publication date: JP2000308492-A, 07-NOV-00	Membrane-bound
sbg139985 4ANK	The ankyrin repeat family	GB: AC020658 Direct submitted (08-JAN-2000) Multimegabase Sequencing Center, University of Washington, PO BOX 357730, Seattle, WA 98195, USA	Human KIAA1223 protein, gi:6330617 Nagase T, Ishikawa K, Kikuno R, Hirosawa M, Nomura N, and Ohara O; 1999.DNA Res 6:337-45.	Cytosolic

Table III

Gene Name	Uses	Associated Diseases
sbg960509 cbrept	<p>An embodiment of the invention is the use of sbg960509cbrept in the treatment or diagnosis of cancer. A close homologue of sbg960509cbrept is Langerin. Langerin was a type II Ca²⁺-dependent lectin, an endocytic receptor and expressed by Langerhans cells (LC). Transfection of Langerin cDNA into fibroblasts created a compact network of membrane structures with typical features of Birbeck granules(BG). It was proposed that induction of BG was a consequence of the antigen-capture function of Langerin, allowing routing into these organelles and providing access to a nonclassical antigen-processing pathway (Valladeau J, Ravel O, Dezutter-Dambuyant C, Moore K, Kleijmeer M, Liu Y, Duvert-Frances V, Vincent C, Schmitt D, Davoust J, Caux C, Lebecque S, Saeland S. 2000. Immunity Jan;12(1):71-81). A striking incongruity was found between variably spliced transcripts for the second asialoglycoprotein receptor polypeptide, H2, in normal and transformed human liver cells (Paietta E, Stockert RJ, Racevskis J. 1992. Hepatology Mar;15(3):395-402). Human macrophage cell surface C-type lectin was demonstrated to recognize Tn Ag, a well-known human carcinoma-associated epitope (Suzuki N, Yamamoto K, Toyoshima S, Osawa T, Irimura T.1996. J Immunol Jan 1;156(1):128-35).</p>	Autoimmune disorder and cancer
sbg614126 complfH	<p>An embodiment of the invention is the use of sbg614126complfH in the diagnosis or treatment of cancer, Alzheimer disease, and/or tumor cell evasion. A close homologue of sbg614126complfH is Human complement factor H. Human complement factor H was detected by the AM34 antibody in the cerebrospinal fluid from an Alzheimer's disease patient. It was recently found that AM34 was capable of staining senile plaques positively and factor H was associated with senile plaques in the human brain (Honda S, Itoh F, Yoshimoto M, Ohno S, Hinoda Y, Imai K. 2000. J Gerontol A Biol Sci Med Sci. May;55(5):M265-9). It was also suggested that exceptional resistance of human H2 glioblastoma cells to complement-mediated killing was due to the production and binding of factor H and factor H-like protein 1 (Junnikkala S, Jokiranta TS, Friese MA, Jarva H, Zipfel PF, Meri S. 2000. J Immunol. Jun 1;164(11):6075-81). Moreover, factor H was shown to bind to bone sialoprotein and osteopontin and enable tumor cell evasion of complement-mediated attack (Fedarko NS, Fohr B, Robey PG, Young MF, Fisher LW. 2000. J Biol Chem. Jun 2;275(22):16666-72). Finally, complement factor H gene mutation was associated with autosomal recessive atypical hemolytic uremic syndrome (Ying L, Katz Y, Schlesinger M, Carmi R, Shalev H, Haider N, Beck G, Sheffield VC, Landau D. 1999. Am J Hum Genet Dec;65(6):1538-46).</p>	Alzheimer's disease, cancer, tumor metastasis and autosomal recessive atypical hemolytic uremic syndrome

Table III (cont).

Gene Name	Uses	Associated Diseases
sbg120703 RNase	An embodiment of the invention is the use of sbg120703RNase as a tool for anticancer therapy, and treating apoptosis-related disorders. It has been shown that a genetic-engineered pancreatic RNase has cytotoxic action on mouse and human tumor cells, but lacks any appreciable toxicity on human and mouse normal cells. This variant of human pancreatic RNase selectively sensitized cells derived from a human thyroid tumor to apoptotic death. Because of its selectivity for tumor cells, and because of its human origin, this protein is thought to represent a promising tool for anticancer therapy (Piccoli R, Di Gaetano S, De Lorenzo C, Grauso M, Monaco C, Spalletti-Cernia D, Laccetti P, Cinatl J, Matousek J, D'Alessio G. 1999. Proc Natl Acad Sci U S A 96:7768-73). In addition, RNase itself can be used to treat an RNA viral infection, and its antagonist may be useful in treating apoptosis-related disorders.	Cancer and infection
sbg98530TS	An embodiment of the invention is the use of sbg98530TS in the wound healing processes, development of the nervous system, and affecting cell migration, survival, or angiogenesis. Close homologues of sbg98530TS are thrombospondins. The thrombospondins are a family of proteins found widely in the embryonic extracellular matrix, and the expression patterns and in vitro properties of many thrombospondins suggest potential roles in the guidance of cell and growth cone migration, especially during the development of the nervous system (Adams JC, 2000. Tucker RP Dev Dyn 218:280-99). Cell interactions with extracellular matrices are important to pathological changes that occur during cell transformation and tumorigenesis. The thrombospondin-1 has been suggested to modulate tumor phenotype by affecting cell migration, survival, or angiogenesis (Liaw L, Crawford HC. 1999. Braz J Med Biol Res 32:805-12). In addition, thrombospondin-1 is also a transient component of extracellular matrix in developing and repairing tissues (Adams JC. 1997. Int J Biochem Cell Biol 29:861-5).	Cancer, wound healing disorders
sbg563917 RDP	An embodiment of the invention is the use of sbg563917RDP in treatment or diagnosis of chronic renal failure and aged eye lenses and cataracts. Close homologues of sbg563917RDP are renal and lens dipeptidases. It has been reported that the renal dipeptidase activity was significantly lower in the chronic renal failure group (Fukumura Y, Kera Y, Oshitani S, Ushijima Y, Kobayashi I, Liu Z, Watanabe T, Yamada R, Kikuchi H, Kawazu S and Yabuuchi M. 1999 Ann Clin Biochem Mar;36 (Pt 2):221-5). In contrast, increased lens dipeptidase activity was detected in aging and cataracts (Sulochana KN, Ramakrishnan S and Punitham R. 1999 Br J Ophthalmol Jul;83(7):885).	Renal diseases, aging, cataract, cancer, and Alzheimer disease

Table III (cont).

Gene Name	Uses	Associated Diseases
sbg618069 LRR	An embodiment of the invention is the use of sbg618069LRR in treatment or diagnosis of neural development and the adult nervous system disorders. Close homologues of sbg618069LRR are Leucine-rich repeat proteins. Leucine-rich repeat protein, the spineless-aristapedia, has been shown to interact with tango bHLH-PAS proteins for controlling antennal and tarsal development in <i>Drosophila</i> (Emmons RB, Duncan D, Estes PA, Kiefel P, Mosher JT, Sonnenfeld M, Ward MP, Duncan I and Crews ST. 1999. Development Sep;126(17):3937-45). In mouse, neuronal Leucine-Rich Repeat NLRR-1 and NLRR-2 mRNAs were expressed primarily in the central nervous system and may play significant but distinct roles in neural development and in the adult nervous system (Taguchi A, Wanaka A, Mori T, Matsumoto K, Imai Y, Tagaki T and Tohyama M. 1996. Brain Res Mol Brain Res Jan;35(1-2):31-40). Furthermore, a new member of the leucine-rich repeat superfamily GAC1 was amplified and overexpressed in malignant gliomas (Almeida A, Zhu XX, Vogt N, Tyagi R, Muleris M, Dutrillaux AM, Dutrillaux B, Ross D, Malfoy B and Hanash S. 1998. Oncogene Jun 11;16(23):2997-3002).	Tango-associated diseases, disorders associated with the preservation and maintenance of gastrointestinal mucosa and the repair of acute and chronic mucosal lesions, Parkinson's disease, Alzheimer's disease, ALS, neuropathies, cancer, wound healing and tissue repair
sbg934114 Relaxin	An embodiment of the invention is the use of sbg934114Relaxin in treatment or diagnosis of collagen remodeling, breast cancer, and uterine contractile disorders. A close homologue of sbg934114Relaxin is Relaxin. Relaxin has various biologic activities, including the induction of collagen remodeling and consequent softening of the tissues of the birth canal during delivery, the inhibition of uterine contractile activity, and the stimulation of growth and differentiation of the mammary gland (Bani D. 1997. Gen Pharmacol 28:13-22). Relaxin belongs to the insulin superfamily, and is produced primarily by the corpus luteum in both pregnant and nonpregnant females. In males, relaxin is synthesized in the prostate and released in the seminal fluid (Goldsmith LT, Weiss G, Steinetz BG. 1995. Endocrinol Metab Clin North Am 24:171-86). It has been further demonstrated that relaxin regulates growth and differentiation of breast cancer cells in culture, promotes dilation of blood vessels in several organs, including the uterus, the mammary gland, the lung and the heart, has a chronotropic action on the heart, inhibits the release of histamine by mast cells, depresses aggregation of platelets and their release by megakaryocytes, and influences the secretion of hormones by the pituitary gland (Bani D. 1997. Gen Pharmacol 28:13-22). In addition, some reports have shown that relaxin is effective in decreasing skin involvement in systemic sclerosis (Furst DE. 1998. Curr Opin Rheumatol 10:123-8).	Cancer, rheumatic diseases, heart diseases, systemic sclerosis (scleroderma), and preterm birth

Table III (cont).

Gene Name	Uses	Associated Diseases
sbg99174L OX-like	An embodiment of the invention is the use of sbg99174LOX-like in treatment or diagnosis of endothelial function or atherosclerosis. A close homologue of sbg99174LOX-like is oxidized low-density lipoprotein receptor 1. sbg99174LOX-like as well as oxidized low-density lipoprotein receptor 1, contain a C-type lectin domain (CTL) (Colonna M, Samaridis J, Angman L. 2000. <i>Eur J Immunol</i> 30:697-704). Evidence suggests that oxidized low-density lipoprotein (OxLDL) plays a critical role in the changes in endothelial function. Lectin-like OxLDL receptor-1 (LOX-1) is the major endothelial OxLDL receptor. Functional changes of endothelial cells are implicated in the earliest stage of the pathogenesis of atherosclerosis (Aoyama T, Sawamura T, Furutani Y, Matsuoka R, Yoshida MC, Fujiwara H, Masaki T. <i>Biochem J</i> . 1999 339 (Pt 1):177-84).	Cardiovascular disorders (e.g. atherosclerosis, hypertension, stroke),
sbg995002 PIGR	An embodiment of the invention is the use of sbg995002PIGR to actively transport IgA and IgM to the apical surface of epithelia. A close homologue of sbg995002PIGR is polymeric-immunoglobulin receptor. The polymeric-immunoglobulin receptor binds polymeric IgA and IgM at the basolateral surface of epithelial cells. PIGR knockout mice completely lack active external IgA and IgM translocation, but remain normal and fertile (Johansen FE, Pekna M, Norderhaug IN, Haneberg B, Hietala MA, Krajci P, Betsholtz C, Brandtzaeg P. 1999. <i>J Exp Med</i> 190:915-22). In addition, it has been reported that PIGR can be upregulated by tumor necrosis factor (TNF)-alpha (Takenouchi-Ohkubo N, Takahashi T, Tsuchiya M, Mestecky J, Moldoveanu Z, Moro I; 2000. <i>Immunogenetics</i> 51:289-95).	Infection and inflammation such as inflammatory bowel disease, gluten-sensitive enteropathy, and urinary tract infection)
sbg103302 6C1q	An embodiment of the invention is the use of sbg1033026C1q to regulate central nervous system functions. A close homologue of sbg1033026C1q is C1q-related factor. C1q is a subunit of the C1 enzyme complex that activates the serum complement system. It has been shown that human C1q-related factor (CRF) transcript is expressed at highest levels in the brain, particularly in the brainstem. Similarly, in mouse brain CRF transcripts are most abundant in areas of the nervous system involved in motor function (Berube NG, Swanson XH, Bertram MJ, Kittle JD, Didenko V, Baskin DS, Smith JR, and Pereira-Smith OM., 1999, <i>Brain Res. Mol. Brain Res.</i> 63:233-240). Moreover, ACRP30 is structurally similar to complement factor C1q, and it forms large homo-oligomers that undergo a series of post-translational modifications. ACRP30 proteins may be a factor that participates in the complex balanced system of energy homeostasis involving food intake, carbohydrate catabolism, and lipid catabolism (Scherer PE, Williams S, Fogliano M, Baldini G, Lodish HF; 1995; <i>J Biol Chem</i> 270:26746-9).	Central nervous system disorder
sbg100367 5RNase	An embodiment of the invention is the use of sbg1003675RNase as a promising tool for anticancer therapy, and apoptosis-related disorders. A close homologue of sbg1003675RNase is RNase. It has been shown that a genetic-engineered pancreatic RNase has cytotoxic action on mouse and human tumor cells, but lacks any appreciable	Viral infection, and tumor

	<p>toxicity on human and mouse normal cells. This variant of human pancreatic RNase selectively sensitized cells derived from a human thyroid tumor to apoptotic death. Because of its selectivity for tumor cells, and because of its human origin, this protein was thought to represent a promising tool for anticancer therapy (Piccoli R, Di Gaetano S, De Lorenzo C, Grauso M, Monaco C, Spalletti-Cernia D, Laccetti P, Cinatl J, Matousek J, D'Alessio G. 1999. Proc Natl Acad Sci U S A 96:7768-73). Moreover, RNase itself can be used to treat an RNA viral infection, and its antagonist of this RNase may be useful in treating apoptosis-related disorders.</p>	
<p>sbg101525 8PLM</p>	<p>An embodiment of the invention is the use of sbg1015258PLM to regulate skeletal and cardiac muscle disorders. A close homologue of sbg1015258PLM is phospholemman. The phospholemman (PLM) is enriched in skeletal muscle and the heart, and is a major substrate phosphorylated in response to insulin and adrenergic stimulation. All phospholemman proteins are small and have a single transmembrane domain (Chen LS, Lo CF, Numann R, Cuddy M. 1997. Genomics 41:435-4). Phospholemman can be phosphorylated by protein kinases A and C to induce a hyperpolarization-activated chloride current, and therefore may play a role in muscle contraction. Recently phospholemman was shown to be a substrate for myotonic dystrophy protein kinase, and therefore is associated with the disease, an autosomal dominant-inherited disorder with prominent effects on skeletal and cardiac muscle (Mounsey JP, John JE 3rd, Helmke SM, Bush EW, Gilbert J, Roses AD, Perryman MB, Jones LR, Moorman JR. 2000. J Biol Chem 275:23362-7).</p>	<p>Myotonic muscular dystrophy</p>
<p>sbg100332 8IG</p>	<p>An embodiment of the invention is the use of sbg1003328IG to generate immunosuppressants to suppress immune responses. A close homologue of sbg1003328IG is V7, a human leukocyte surface protein (Stockinger H, Gadd SJ, Eher R, Majdic O, Schreiber W, Kasinrerker W, Strass B, Schnabl E, Knapp W. 1990. J Immunol 145:3889-97). sbg1003328IG is an immunoglobulin (Ig)-like membrane protein containing three potential Ig domains, and it has an overall strong sequence similarity to V7.</p>	<p>Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, and inflammation</p>
<p>sbg102082 9SGLT</p>	<p>An embodiment of the invention is the use of sbg1020829SGLT to regulate Na(+)-dependent glucose transport. A close homologue of sbg1020829SGLT is Na⁺/glucose cotransporters. The human intestinal Na⁺/glucose cotransporter (SGLT1) was cloned and sequenced. Close homology was observed between the human and rabbit intestinal Na⁺/glucose cotransporters, and a significant homology was found between these and the Escherichia coli Na⁺/proline cotransporter (putP) indicating that the mammalian Na⁺/glucose and prokaryote Na⁺/proline cotransporters sharing a common ancestral gene (Hediger MA, Turk E, Wright EM. 1989 Proc Natl Acad Sci U S A Aug;86(15):5748-52). In addition, study of intestinal biopsies of glucose/galactose malabsorption (GCM) patients has revealed a specific defect in Na(+)-dependent absorption of glucose in the brush border. A single missense mutation was found in SGLT1 amplified from the genomic DNA derived from members of a family affected with GGM. This mutated SGLT1 cosegregated with the GGM</p>	<p>Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, inflammation and glucose/galactose malabsorption</p>

	phenotype and resulted in a complete loss of Na(+)-dependent glucose transport in <i>Xenopus</i> oocytes injected with this complementary RNA (Turk E, Zabel B, Mundlos S, Dyer J, Wright EM. 1991 Nature Mar 28;350(6316):354-6).	
sbg100545 UDPGT	An embodiment of the invention is the use of sbg100545UDPGT to regulate estrogen and androgen catabolism in peripheral steroid target tissues. A close homologue of sbg100545UDPGT is UDP-glucuronosyltransferase (UDPGT) gene. Mutations had been found in the promoter and coding regions of UDP-glucuronosyltransferase (UDPGT) gene in seven patients with Crigler-Najjar syndrome type II caused by reduction in hepatic bilirubin UDPGT activity (Yamamoto K, Soeda Y, Kamisako T, Hosaka H, Fukano M, Sato H, Fujiyama Y, Adachi Y, Satoh Y, Bamba T. 1998. J Hum Genet 43(2):111-4). A case of Gilbert syndrome caused by a homozygous missense mutation of the bilirubin UDPGT gene was also reported (Maruo Y, Sato H, Yamano T, Doida Y, Shimada M. 1998. J Pediatr Jun;132(6):1045-7). In addition, monkey UDPGT UGT1A9 had been cloned and the mRNA was expressed in extrahepatic estrogen-responsive tissues indicating its potential role in estrogen metabolism (Albert C, Vallee M, Beaudry G, Belanger A, Hum DW. 1999. Endocrinology Jul;140(7):3292-302). Human UDPGT UGT2B23 transcript was also expressed in extrahepatic tissues including prostate, mammary gland, epididymis, testis, and ovary. The activity of UGT2B23 was tested with 62 potential endogenous substrates and was demonstrated to be active on 6 steroids and the bile acid, hyodeoxycholic acid suggesting that UGT2B23 might play an important role in estrogen and androgen catabolism in peripheral steroid target tissues (Barbier O, Levesque E, Belanger A, Hum DW. 1999. Endocrinology Dec;140(12):5538-48).	Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, inflammation, Gilbert syndrome, Crigler-Najjar syndrome (CN) type II, and steroid hormone catabolism malfunction
sbg100262 OTIa	An embodiment of the invention is the use of sbg100262OTIa to regulate human tumor cells. A close homologue of sbg100262OTIa is human hypothetical protein DKFZp434B044. This gene is also similar to trypsin inhibitor which contains Sc7 family of extracellular domains at its N-terminal region (Genome Res. 11 (3), 422-435 (2001)). Trypsin inhibitor P25TI sequence had similarity to CRISP family proteins including insect venom allergens, mammalian testis-specific proteins and plant pathogenesis-related proteins. mRNA encoding P25TI and another two glioma pathogenesis-related protein GliPR and RTVP-1, which were also shown to be structurally similar to CRISP family proteins was frequently expressed in human tumor tissues but not detected in normal human tissue cell lines (Yamakawa T, Miyata S, Ogawa N, Koshikawa N, Yasumitsu H, Kanamori T, Miyazaki K. 1998. Biochim Biophys Acta Jan 21; 1395(2):202-8., Murphy EV, Zhang Y, Zhu W, Biggs J. 1995. Gene Jun 14;159(1):131-5., Rich T, Chen P, Furman F, Huynh N, Israel MA. 1996. Gene Nov 21;180(1-2):125-30).	Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, inflammation, blood coagulation disorders, cellular adhesion disorders, pancreatitis, shock, multi-organ failure, and gastrointestinal ulceration
sbg100262 OTIb	An embodiment of the invention is the use of sbg100262OTIb as a marker for some nervous system tumors, and to regulate expression of human neuroblastoma and glioblastoma. A close homologue of sbg100262OTIb is late-gestation lung 1 (LGL1) protein. Late-gestation lung 1 (LGL1) protein showed 81% homology to P25TI, the trypsin	Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders,

	<p>inhibitor purified from the culture medium of human glioblastoma cells (Kaplan F, Ledoux P, Kassamali FQ, Gagnon S, Post M, Koehler D, Deimling J, Sweezey NB. 1999. <i>Am J Physiol Jun</i>;276(6 Pt 1):L1027-36; Koshikawa N, Nakamura T, Tsuchiya N, Isaji M, Yasumitsu H, Umeda M, Miyazaki K. 1996. <i>J Biochem (Tokyo) Feb</i>;119(2):334-9). The cDNA encoding P25TI was isolated and the sequence had similarity to CRISP family proteins including insect venom allergens, mammalian testis-specific proteins and plant pathogenesis-related proteins. P25TI mRNA was frequently expressed in human neuroblastoma and glioblastoma but not detected in normal human tissues cell lines (Yamakawa T, Miyata S, Ogawa N, Koshikawa N, Yasumitsu H, Kanamori T, Miyazaki K. 1998. <i>Biochim Biophys Acta Jan</i> 21; 1395(2):202-8). Another two glioma pathogenesis-related protein GliPR and RTVP-1 were also shown to be structurally similar to CRISP family proteins. The GLIPR gene was highly expressed in the human brain tumor, glioblastoma multiforme/astrocytoma, but neither in normal fetal or adult brain tissue, nor in other nervous system tumors (Murphy EV, Zhang Y, Zhu W, Biggs J. 1995. <i>Gene Jun</i> 14;159(1):131-5). Multiple RTVP-1 mRNA species were highly expressed in a panel of cell lines from nervous system tumors arising from glia, in contrast, the expression of these RNAs was low or absent in nonglial-derived nervous system tumor cell lines (Rich T, Chen P, Furman F, Huynh N, Israel MA. 1996. <i>Gene Nov</i> 21;180(1-2):125-30).</p>	<p>inflammation, blood coagulation disorders, cellular adhesion disorders, pancreatitis, shock, multi-organ failure, and gastrointestinal ulceration</p>
sbg102200 MCTa	<p>An embodiment of the invention is the use of sbg102200MCTa in regulating cancer cells, including the hematopoietic lineages, Burkitt's lymphoma, and solid tumor cells. A close homologue of sbg102200MCTa is MCT1 from Chinese hamster and mouse. Mouse H+-monocarboxylate cotransporter (MCT1) was cloned and sequenced from Ehrlich Lettre tumour cells, the sequence of MCT1 is 93% and 87% homologous to MCT1 from Chinese hamster and human, respectively. N-glycanase-F treatment and an in vitro translation experiments demonstrated that glycosylation was not required for MCT1 function (Carpenter L, Poole RC, Halestrap AP. 1996. <i>Biochim Biophys Acta Mar</i> 13;1279(2):157-63). Chick monocarboxylate transporter MCT3 cloned from retinal pigment epithelium (RPE) cDNA library was found only expressed in RPE cells. A rat thyroid epithelial cell line FRTL transfected with pCI-neo/MCT3 showed enhanced pyruvate uptake suggesting that MCT3 may regulate lactate levels in the interphotoreceptor space (Yoon H, Fanelli A, Grollman EF, Philp NJ. 1997. <i>Biochem Biophys Res Commun May</i> 8;234(1):90-4). In human, MCT2 had been implicated as a primary pyruvate transporter in man. The mRNAs of MCT1 and MCT2 were found co-expressed in various human cancer cell lines, including the hematopoietic lineages HL60, K562, MOLT-4, Burkitt's lymphoma Raji, and solid tumor cells such as SW480, A549, and G361. These findings suggested that human MCT1 and MCT2 may have distinct biological roles (Lin RY, Vera JC, Chaganti RS, Golde DW. 1998. <i>J Biol Chem Oct</i> 30;273(44):28959-65).</p>	<p>Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, and inflammation</p>
sbg102200 MCTb	<p>An embodiment of the invention is the use of sbg102200MCTb in regulating cancer cells, including the hematopoietic lineages, Burkitt's lymphoma, and solid tumor</p>	<p>Cancer, infection, autoimmune disorder,</p>

	<p>cells. A close homologue of sbg102200MCTb is MCT1 from Chinese hamster and mouse. Mouse H⁺-monocarboxylate cotransporter (MCT1) was cloned and sequenced from Ehrlich Lettre tumour cells, the sequence of MCT1 is 93% and 87% homologous to MCT1 from Chinese hamster and human, respectively. N-glycanase-F treatment and an in vitro translation experiments demonstrated that glycosylation was not required for MCT1 function (Carpenter L, Poole RC, Halestrap AP. 1996. <i>Biochim Biophys Acta</i> Mar 13;1279(2):157-63). Chick monocarboxylate transporter MCT3 cloned from retinal pigment epithelium (RPE) cDNA library was found only expressed in RPE cells. A rat thyroid epithelial cell line FRTL transfected with pCl-neo/MCT3 showed enhanced pyruvate uptake suggesting that MCT3 may regulate lactate levels in the interphotoreceptor space (Yoon H, Fanelli A, Grollman EF, Philp NJ. 1997. <i>Biochem Biophys Res Commun</i> May 8;234(1):90-4). In human, MCT2 had been implicated as a primary pyruvate transporter in man. The mRNAs of MCT1 and MCT2 were found co-expressed in various human cancer cell lines, including the hematopoietic lineages HL60, K562, MOLT-4, Burkitt's lymphoma Raji, and solid tumor cells such as SW480, A549, and G361. These findings suggested that human MCT1 and MCT2 may have distinct biological roles (Lin RY, Vera JC, Chaganti RS, Golde DW. 1998. <i>J Biol Chem</i> Oct 30;273(44):28959-65).</p>	hematopoietic disorder, wound healing disorders, and inflammation
sbg102038 OLYG	<p>An embodiment of the invention is the use of sbg102038OLYG in the immune system and enhance the activity of immunoagents and may serve as biomarkers of periodontal disease activity. Close homologues of sbg102038OLYG are lysozymes. Lysozymes are bacteriolytic defensive agents and have been adapted to serve a digestive function (Qasba PK, Kumar S, 1997, <i>Crit Rev Biochem Mol Biol</i> 32:255-306). Those in tissue and body fluids are involved in the immune system and enhance the activity of immunoagents. Lysozymes may serve as biomarkers of periodontal disease activity from inflammatory cell origin (Eley BM, and Cox SW, 1998, <i>Br Dent J</i> 184:323-8).</p>	Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, and inflammation
sbg100702 6SGLT	<p>An embodiment of the invention is the use of sbg1007026SGLT, a human sodium-glucose cotransporter, in regulation of Glucose/galactose malabsorption (GGM), familial renal glycosuria, and diabetic renal disorders. Close homologues of sbg1007026SGLT are other sodium-glucose cotransporters from humans and rabbits. Human sodium-glucose cotransporters are responsible for the active accumulation of glucose in cells (Hediger MA, Turk E, Wright EM. 1989. <i>Proc Natl Acad Sci U S A</i> 86:5748-52). The renal sodium-glucose cotransporter may be related to the pathophysiology of renal diseases such as familial renal glycosuria and diabetic renal disorders (Kanai Y, Lee WS, You G, Brown D, Hediger MA. 1994. <i>J Clin Invest</i> 93:397-404). In addition, study of glucose/galactose malabsorption (GGM) patients has revealed a specific defect in sodium-dependent absorption of glucose in the brush border, and the consequent severe diarrhea and dehydration caused by glucose/galactose malabsorption are usually lethal unless these sugars are eliminated from the diet (Turk E, Zabel B, Mundlos S, Dyer J, Wright EM. 1991 <i>Nature</i> 350:354-6).</p>	Glucose/galactose malabsorption (GGM), familial renal glycosuria, and diabetic renal disorders

sbg101273 2GLUT	<p>An embodiment of the invention is the use of sbg1012732GLUT, in the maintenance of cellular homeostasis and metabolism. Close homologues of sbg1012732GLUT are transmembrane glucose transporters (gluts). Glucose uptake is achieved by transmembrane glucose transporters (gluts), and the transport of glucose across plasma membranes is important for the maintenance of cellular homeostasis and metabolism. Glucose is taken up by cells and then phosphorylated to glucose-6-phosphate, and glucose utilization by cancer cells is greatly enhanced when compared with that by normal tissue. Tumor tissue is frequently associated with the abnormal and/or over-expression of glucose transporters, especially glut1 (Smith TA. 1999. Br J Biomed Sci 56:285-92). Increased utilization of glucose in glomerular cells cause the increased expression and activity of aldose reductase, protein kinase C and TGF-beta, which have been implicated in excessive extracellular matrix accumulation in diabetic nephropathy (Z Katedry i Zakladu Patofizjologii, Akaemii Medycznej w Poznaniu. 1999. Przegl Lek 56:793-9). Changes in endothelial glucose transport and GLUT1 abundance in the barriers of the brain and retina may severely affect glucose delivery to these tissues and major implications in the development of two major diabetic complications, insulin-induced hypoglycemia and diabetic retinopathy (Kumagai AK. 1999. Diabetes Metab Res Rev 15:261-73).</p>	Tumor, diabetic nephropathy, and insulin-induced hypoglycemia
sbg101273 2GLUTb	<p>An embodiment of the invention is the use of sbg1012732GLUTb, in the maintenance of cellular homeostasis and metabolism. Close homologues of sbg1012732GLUTb are transmembrane glucose transporters (gluts). Glucose uptake is achieved by transmembrane glucose transporters (gluts), and the transport of glucose across plasma membranes is important for the maintenance of cellular homeostasis and metabolism. Glucose is taken up by cells and then phosphorylated to glucose-6-phosphate, and glucose utilization by cancer cells is greatly enhanced when compared with that by normal tissue. Tumor tissue is frequently associated with the abnormal and/or over-expression of glucose transporters, especially glut1 (Smith TA. 1999. Br J Biomed Sci 56:285-92). Increased utilization of glucose in glomerular cells cause the increased expression and activity of aldose reductase, protein kinase C and TGF-beta, which have been implicated in excessive extracellular matrix accumulation in diabetic nephropathy (Z Katedry i Zakladu Patofizjologii, Akaemii Medycznej w Poznaniu. 1999. Przegl Lek 56:793-9). Changes in endothelial glucose transport and GLUT1 abundance in the barriers of the brain and retina may severely affect glucose delivery to these tissues and major implications in the development of two major diabetic complications, insulin-induced hypoglycemia and diabetic retinopathy (Kumagai AK. 1999. Diabetes Metab Res Rev 15:261-73).</p>	Tumor, diabetic nephropathy, and insulin-induced hypoglycemia
sbg101817 2CSP	<p>An embodiment of the invention is the use of sbg1018172CSP in regulation of melanoma, autoimmune disorders, hematopoietic disorder, wound healing, and inflammation. A close homologue of sbg1018172CSP is melanoma-associated chondroitin sulfate proteoglycan</p>	Melanoma, infection, autoimmune disorder, hematopoietic

	<p>(MCSP) core protein NG2. The MCSP core protein NG2 can act as a coreceptor for spreading and focal contact formation in association with alpha 4 beta 1 integrin in melanoma cells (Iida J, Meijne AM, Spiro RC, Roos E, Furcht LT, McCarthy JB. 1995. Cancer Res Mar 15;55(10):2177-85). Cloning of MCSP recognized by mAb 9.2.27 showed that the core protein contained an open reading frame of 2322 AAs, encompassing a large extracellular domain, a hydrophobic transmembrane region, and a relatively short cytoplasmic tail. MCSP RNA was detected in human melanoma cell lines and in biopsies prepared from melanoma skin metastases but not in other human cancer cells or a variety of human fetal and adult tissues (Pluschke G, Vanek M, Evans A, Dittmar T, Schmid P, Itin P, Filardo EJ, Reisfeld RA. 1996. Proc Natl Acad Sci U S A Sep 3;93(18):9710-5).</p>	<p>disorder, wound healing, and inflammation</p>
<p>sbg100457 0ERGIC</p>	<p>An embodiment of the invention is the use of sbg1004570ERGIC as a probe for studying protein trafficking in the secretory pathway which is crucial for the elucidation and treatment of many inherited and acquired diseases, such as cystic fibrosis, Alzheimer's disease and viral infections in regulation of melanoma, autoimmune disorders, hematopoietic disorder, wound healing, and inflammation. A close homologue of sbg1004570ERGIC is ERGIC-53, an ER-Golgi intermediate compartment (ERGIC) protein. A ERGIC protein was elevated more than two fold in HT-29 colon adenocarcinoma cells resistant to the the antitumor drug KRN5500. Together with other information, the cellular secretory pathway was suggested a primary determinant of sensitivity to KRN550 (Kamishohara M, Kenney S, Domergue R, Vistica DT, Sausville EA. 2000 Exp Cell Res May 1;256(2):468-79). Mutations in ERGIC-53 was shown to cause combined deficiency of coagulation factors V and VIII and it was suggested that ERGIC-53 might function as a molecular chaperone for the transport from ER to Golgi of a specific subset of secreted proteins, including coagulation factors V and VII (Nichols WC, Seligsohn U, Zivelin A, Terry VH, Hertel CE, Wheatley MA, Moussalli MJ, Hauri HP, Ciavarella N, Kaufman RJ, Ginsburg D. 1998. Cell Apr 3;93(1):61-70). In addition, ERGIC-53 was reviewed as an attractive probe for studying numerous aspects of protein trafficking in the secretory pathway which is crucial for the elucidation and treatment of many inherited and acquired diseases, such as cystic fibrosis, Alzheimer's disease and viral infections (Hauri HP, Kappeler F, Andersson H, Appenzeller C. 2000 J Cell Sci Feb;113 (Pt 4):587-96).</p>	<p>Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, inflammation, and Alzheimer's disease.</p>
<p>sbg101699 5IGBrecpt</p>	<p>An embodiment of the invention is the use of sbg1016995IGBrecpt in the clearance of circulating autoantibodies and immune complexes. A close homologue of sbg1016995IGBrecpt is guinea pig Fc receptor for immunoglobulin (Tominaga M, Sakata A, Ohmura T, Yamashita T, Koyama J, Onoue K, 1990. Biochem Biophys Res Commun Apr 30;168(2):683-9). IgG Fc-receptor polymorphisms have been reported recently in patients with guillain-Barre syndrome indicating the role of IgG Fc-receptor in the clearance of circulating autoantibodies and immune complexes (Vedeler CA, Raknes G, Myhr KM, Nyland H. 2000 Neurology Sep 12;55(5):705-7).</p>	<p>Auto-immune diseases, allergy, and guillain-Barre syndrom</p>

sbg1151bS REC	<p>An embodiment of the invention is the use of sbg1151bSREC, a scavenger receptor, in the regulation of pathogenesis in atherosclerosis and the formation of foam cells in atherosclerotic lesions. A close homologue of sbg1151bSREC is scavenger receptor class A type I and type II. Most of the scavenger receptors interacted with several structurally different ligands such as oxidized low density lipoprotein (Ox-LDL) and acetyl LDL. Several studies showed Ox-LDL was involved in the pathogenesis of atherosclerosis (Steinbrecher UP. 1999 Biochim Biophys Acta Jan 4;1436(3):279-98). In macrophages scattered in aortic walls without atherosclerotic lesions, scavenger receptor class A type I and type II (SRA) was detected weakly but consistently. In contrast, in atherosclerotic lesions, macrophages around the core region showed a strong immunoreactivity to SRA indicating the involvement of SRA in the formation of foam cells in atherosclerotic lesions (Nakata A, Nakagawa Y, Nishida M, Nozaki S, Miyagawa J, Nakagawa T, Tamura R, Matsumoto K, Kameda-Takemura K, Yamashita S and Matsuzawa Y. Arterioscler Thromb Vasc Biol 1999 May;19(5):1333-9).</p>	Atherosclerosis disease
sbg139985 4ANK	<p>An embodiment of the invention is the use of sbg1399854ANK in protein-protein interactions and it may act by inhibiting protein of cyclin dependent kinase. The present invention contains both death domain and ankyrin repeat region. The death domain is involved in cell death signaling (Cleveland J. and Ihle J.N. 1995. Cell 81:479-482). Ankyrin repeats (ANK) are tandem repeat modules of about 33 amino acids. Many ankyrin repeat regions are known to be involved in protein-protein interaction (Svetlana Gorina and Nikola P. Pavletich; 1996 Science 274:1001-1005).</p>	Cancer, infection, autoimmune disorder, hematopoietic disorder, wound healing disorders, and inflammation

Table IV. Quantitative, Tissue-specific mRNA expression detected using SybrMan

Quantitative, tissue-specific, mRNA expression patterns of the genes were measured using SYBR-Green Quantitative PCR (Applied Biosystems, Foster City, CA; see Schmittgen T.D. et al., Analytical Biochemistry 285:194-204, 2000) and human cDNAs prepared from various human tissues. Gene-specific PCR primers were designed using the first nucleic acid sequence listed in the Sequence List for each gene. The threshold cycle (C_t) is defined as the fractional cycle number at which the reporter fluorescence generated by cleavage of the probe reaches a threshold defined as 10 times the background. In cases sequence detection system software predicted more than one PCR product, Taqman was used for the specific PCR amplification as indicated under the specific genes.

In each gene's first subset table, two replicate measurements of gene of identification (GOI) mRNA were measured from various human tissues (column 3 and 4). The average GOI mRNA copies of the two replicates were made from each tissue RNA (column 5). The average amount of 18S rRNA from each tissue RNA was measured (column 6) and used for normalization. To make each tissue with the same amount of 50 ng of 18S rRNA, the normalization factor (column 7) was calculated by dividing 50 ng with the amount of 18S rRNA measured from each tissue (column 6). The mRNA copies per 50 ng of total RNA were obtained by multiplying each GOI normalization factor and the average mRNA copies (column 8).

Fold changes shown in each gene's second subset table were only calculated for disease tissues which have a normal counterpart. There are blanks in the fold change column for all samples that do not have counterparts. In addition, the fold change calculations are the fold change in the disease sample as compared to the normal sample. Accordingly, there will not be a fold change calculation next to any of the normal samples. For patient matched cancer pairs (colon, lung, and breast), each tumor is compared to its specific normal counterpart. When patient-matched normal/disease pairs do not exist, each disease sample was compared back to the average of all the normal samples of that same tissue type. For example, normal brain from the same patient that provided Alzheimer's brain is not applicable. Three normal brain samples and 4 Alzheimer's brain samples are used in the fold change. Three normal samples were averaged, and each of the Alzheimer's samples was compared back to that average.

Abbreviations

ALZ Alzheimer's Disease

CT CLONTECH (1020 East Meadow Circle Palo Alto, CA 94303-4230, USA)

KC Sample prepared by GSK investigator

COPD chronic obstructive pulmonary disease

endo endothelial

VEGF vascular endothelial growth factor

bFGF basic fibroblast growth factor

BM bone marrow

osteo osteoblast

OA osteoarthritis

RA rheumatoid arthritis

PBL peripheral blood lymphocytes

PBMNC peripheral blood mononuclear cells

HIV human immunodeficiency virus

HSV Herpes simplex virus

HPV human papilloma virus

Gene Name sbg960509cbrept

Lowest overall expression in normal and disease samples. Highest normal expression in the whole brain, fetal liver, and uterus. Highest disease expression in 2 of the lung tumor samples, one of the breast tumor samples, and one of the normal breast samples. Downregulation in 1 of 4 colon tumors implies an involvement in cancer of the colon. Downregulation in 2 of 4 AD brain samples as well as high expression in whole brain suggests an involvement in Alzheimer's disease. Downregulation in 3 of 3 COPD lung samples and downregulation in 4 of 4 asthmatic lung samples implicates this gene in COPD and asthma. Upregulation in 2 of 3 heart samples proposes roles in non-obstructive and obstructive DCM. Patterns difficult to interpret due to Cts > 35. Moderate to low expression in immune cells. Moderate expression in OA and RA synovium.

Sample sbg960509cbrept	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Averag e GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0	0	0.00	3.06	16.34	0.00
Subcutaneous Adipose Zenbio	40, 40	0	0	0.00	0.96	52.36	0.00
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	33.26, 32.07	24.63	48.4	36.52	7.24	6.91	252.18
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	40, 40	0	0	0.00	2.17	23.04	0.00
Cervix	40, 40	0	0	0.00	2.42	20.66	0.00
Colon	40, 40	0	0	0.00	2.71	18.45	0.00
Endometrium	40, 40	0.81	0	0.41	0.73	68.21	27.63
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	40, 40	0	0	0.00	2.58	19.38	0.00
Jejunum	35.56, 34.42	6.66	12.71	9.69	6.60	7.58	73.37
Kidney	40, 40	0	0	0.00	2.12	23.58	0.00
Liver	40, 40	0	0	0.00	1.50	33.33	0.00
Fetal Liver Clontech	33.46, 34.83	14.95	27.51	21.23	10.40	4.81	102.07
Lung	40, 40	0	0	0.00	2.57	19.46	0.00
Mammary Gland Clontech	40, 40	21.94	10.06	16.00	13.00	3.85	61.54
Myometrium	40, 40	0	0	0.00	2.34	21.37	0.00
Omentum	40, 40	0	0	0.00	3.94	12.69	0.00
Ovary	40, 40	0	0	0.00	4.34	11.52	0.00
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	40, 40	0	0	0.00	5.48	9.12	0.00
Placenta Clontech	40, 40	0.39	0	0.20	5.26	9.51	1.85
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 40	0	0	0.00	1.23	40.65	0.00
Salivary Gland	34.79, 40	10.31	0	5.16	7.31	6.84	35.26

Clontech							
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	40, 40	0	0	0.00	4.92	10.16	0.00
Stomach	35.8, 38.29	5.82	1.41	3.62	2.73	18.32	66.21
Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00
Thymus Clontech	35.13, 35.08	8.48	8.75	8.62	9.89	5.06	43.55
Thyroid	40, 40	0	0	0.00	2.77	18.05	0.00
Trachea Clontech	35.26, ND	7.9	ND	7.90	9.71	5.15	40.68
Urinary Bladder	40, ND	0	ND	0.00	5.47	9.14	0.00
Uterus	35.09, 33.87	8.67	17.4	13.04	5.34	9.36	122.05
genomic	26.62	1067.33					
b-actin	27.44	670.43					
1.00E+05	19.22	100000					
1.00E+05	19.38	100000					
1.00E+04	22.78	10000					
1.00E+04	20.52	10000					
1.00E+03	26.45	1000					
1.00E+03	27.03	1000					
1.00E+02	30.99	100					
1.00E+02	31.26	100					
1.00E+01	40	0					
1.00E+01	40	0					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg960509cbrept	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populat ion
colon normal GW98-167	21941	29.42		332.32	colon normal	
colon tumor GW98-166	21940	30.95	66.31	132.62	colon tumor	-2.51
colon normal GW98-178	22080	31.32	53.01	106.02	colon normal	
colon tumor GW98-177	22060	30.57	83.1	166.20	colon tumor	1.57
colon normal GW98-561	23514	31.44	49.16	98.32	colon normal	
colon tumor GW98-560	23513	31.81	39.47	78.94	colon tumor	-1.25
colon normal GW98-894	24691	29.44	164.69	329.38	colon normal	
colon tumor GW98-893	24690	34.42	8.18	16.36	colon tumor	-20.13
lung normal GW98-3	20742	28.04	383.11	766.22	lung normal	

lung tumor GW98-2	20741	34.22	9.19	18.38	lung tumor	-41.69
lung normal GW97-179	20677	30.93	66.74	133.48	lung normal	
lung tumor GW97-178	20676	27.11	667.61	1335.22	lung tumor	10.00
lung normal GW98-165	21922	28.31	323.99	647.98	lung normal	
lung tumor GW98-164	21921	30.92	67.22	134.44	lung tumor	-4.82
lung normal GW98-282	22584	31.76	40.67	81.34	lung normal	
lung tumor GW98-281	22583	29.61	148.67	297.34	lung tumor	3.66
breast normal GW00-392	28750	27.64	487.44	487.44	breast normal	
breast tumor GW00-391	28746	27.47	539.99	1079.98	breast tumor	2.22
breast normal GW00-413	28798	33.36	15.44	15.44	breast normal	
breast tumor GW00-412	28797	30.88	68.84	137.68	breast tumor	8.92
breast normal GW00-235:238	27592-95	34.74	6.73	6.73	breast normal	
breast tumor GW00-231:234	27588-91	33.73	12.41	12.41	breast tumor	1.84
breast normal GW98-621	23656	27.7	469.27	938.54	breast normal	
breast tumor GW98-620	23655	33.1	18.13	36.26	breast tumor	-25.88
brain normal BB99-542	25507	31.46	48.61	97.22	brain normal	
brain normal BB99-406	25509	34.17	9.52	19.04	brain normal	
brain normal BB99-904	25546	35.69	3.79	7.58	brain normal	
brain stage 5 ALZ BB99-874	25502	40	0	0.00	brain stage 5 ALZ	-41.28
brain stage 5 ALZ BB99-887	25503	34.96	5.91	11.82	brain stage 5 ALZ	-3.49
brain stage 5 ALZ BB99-862	25504	33.13	17.82	35.64	brain stage 5 ALZ	-1.16
brain stage 5 ALZ BB99-927	25542	40	0	0.00	brain stage 5 ALZ	-41.28
CT lung KC	normal	29.53	155.88	311.76	CT lung	
lung 26 KC	normal				lung 26	
lung 27 KC	normal	39.2	0.46	0.46	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-104.07
lung 28 KC	COPD	40	0	0.00	lung 28	-104.07
lung 23 KC	COPD	34.81	6.44	6.44	lung 23	-16.16
lung 25 KC	normal	40	0	0.00	lung 25	
asthmatic lung ODO3112	29321	38.99	0.52	0.52	asthmatic lung	-200.14
asthmatic lung ODO3433	29323	33.69	12.65	25.30	asthmatic lung	-4.11
asthmatic lung ODO3397	29322	33.53	13.98	27.96	asthmatic lung	-3.72
asthmatic lung ODO4928	29325	34.27	8.96	17.92	asthmatic lung	-5.81
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		40	0	0.00	endo bFGF	0.00
heart Clontech	normal	35.53	4.19	8.38	heart	
heart (T-1) ischemic	29417	34	10.5	21.00	heart T-1	2.51
heart (T-14) non-obstructive DCM	29422	31.16	58.24	116.48	heart T-14	13.90
heart (T-3399) DCM	29426	28.35	317.67	635.34	heart T-3399	75.82

adenoid GW99-269	26162	31.52	46.93	93.86	adenoid	
tonsil GW98-280	22582	30.82	71.35	142.70	tonsil	
T cells PC00314	28453	34.36	8.47	16.94	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	40	0	0.00	B cells	
dendritic cells 28441		31.52	47.02	94.04	dendritic cells	
neutrophils	28440	36.13	2.91	2.91	neutrophils	
eosinophils	28446	40	0	0.00	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim		40	0	0.00	BM stim	0.00
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		40	0	0.00	chondrocytes	
OA Synovium IP12/01	29462	32.08	33.47	33.47	OA Synovium	
OA Synovium NP10/01	29461	31.43	49.5	99.00	OA Synovium	
OA Synovium NP57/00	28464	30.42	91.04	182.08	OA Synovium	
RA Synovium NP03/01	28466	32.11	32.84	65.68	RA Synovium	
RA Synovium NP71/00	28467	31.07	61.51	123.02	RA Synovium	
RA Synovium NP45/00	28475	36.21	2.78	5.56	RA Synovium	
OA bone (biobank)	29217	31.49	47.85	47.85	OA bone (biobank)	
OA bone Sample 1	J. Emory	30.11	109.44	218.88	OA bone	
OA bone Sample 2	J. Emory	32.6	24.52	49.04	OA bone	
Cartilage (pool)	Normal	32.09	33.26	66.52	Cartilage (pool)	
Cartilage (pool)	OA	33.1	18.07	36.14	Cartilage (pool)	-1.84
PBL uninfected	28441	27.68	474.91	949.82	PBL uninfected	
PBL HIV IIIB	28442	31.76	40.5	81.00	PBL HIV IIIB	-11.73
MRC5 uninfected (100%)	29158	40	0	0.00	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	34.15	9.61	19.22	MRC5 HSV strain F	19.22
W12 cells	29179	40	0	0.00	W12 cells	
Keratinocytes	29180	38.16	0.85	1.70	Keratinocytes	
B-actin control		27.02	707.5			
genomic		26.1	1232.73			
1.00E+05		18.64	100000			
1.00E+05		18.95	100000			
1.00E+04		22.4	10000			
1.00E+04		22.17	10000			
1.00E+03		26.34	1000			
1.00E+03		25.94	1000			
1.00E+02		31.03	100			
1.00E+02		32.83	100			
1.00E+01		33.21	10			
1.00E+01		32.93	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg960509cbrecept

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-2.51
colon tumor	1.57
colon tumor	-1.25
colon tumor	-20.13
lung tumor	-41.69
lung tumor	10.00
lung tumor	-4.82
lung tumor	3.66
breast tumor	2.22
breast tumor	8.92
breast tumor	1.84
breast tumor	-25.88
brain stage 5 ALZ	-41.28
brain stage 5 ALZ	-3.49
brain stage 5 ALZ	-1.16
brain stage 5 ALZ	-41.28
lung 24	-104.07
lung 28	-104.07
lung 23	-16.16
asthmatic lung	-200.14
asthmatic lung	-4.11
asthmatic lung	-3.72
asthmatic lung	-5.81
endo VEGF	0.00
endo bFGF	0.00
heart T-1	2.51
heart T-14	13.90
heart T-3399	75.82
BM stim	0.00
osteo undif	0.00
Cartilage (pool)	-1.84
PBL HIV IIIB	-11.73
MRC5 HSV strain F	19.22

5 Gene Name sbg614126complfH

Moderate to low overall expression in normal and disease samples. Highest normal expression in liver and fetal liver. Lower (but still significant expression) is seen in the whole brain, ovary, and uterus. Highest disease expression in 2 of the breast tumor samples, one of the normal brain samples, one of the normal lungs, one of the OA synovium samples, and the HSV-infected MRC5 cells. Upregulation in 1 of 4 colon tumors suggests a role in cancer of the colon. Downregulation in 2 of 4 lung tumors and upregulation in 1 of 4 breast tumors suggest roles in cancers of the lung and breast. Downregulation in 3 of 3 COPD lung samples as well as downregulation in 4 of 4 asthmatic lungs implies an involvement in chronic obstructive pulmonary disease and asthma. Upregulation in 1 of 3 heart samples suggests a role in DCM. Upregulation in HSV implicates involvement in herpes simplex virus as a potential host factor. Moderate to low expression in immune cells, RA and OA synovium bone, and chondrocytes.

Sample	Ct	Mean	Mean	Average	18S	50	copies
sbg614126complfH	(sample 1)	GOI	GOI	GOI	rRNA	ng/18S	of

	and 2)	copies (sample 1)	copies (sample 2)	Copies	(ng)	rRNA (ng)	mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0	0	0.00	3.06	16.34	0.00
Subcutaneous Adipose Zenbio	40, 40	0	0	0.00	0.96	52.36	0.00
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	32.34, 31.88	46.5	61.71	54.11	7.24	6.91	373.65
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	40, 40	0	0	0.00	2.17	23.04	0.00
Cervix	40, 35.04	0	8.88	4.44	2.42	20.66	91.74
Colon	40, 40	0	0	0.00	2.71	18.45	0.00
Endometrium	40, 40	0	0	0.00	0.73	68.21	0.00
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 39.79	0	0.48	0.24	0.32	155.28	37.27
Ileum	40, 36.32	0	4.04	2.02	2.58	19.38	39.15
Jejunum	33.25, 34.19	26.6	14.98	20.79	6.60	7.58	157.50
Kidney	40, 40	0	0	0.00	2.12	23.58	0.00
Liver	28.77, 28.81	417.4	407.38	412.39	1.50	33.33	13746. 33
Fetal Liver Clontech	29.63, 29.5	246.38	266.67	256.53	10.40	4.81	1233.2 9
Lung	40, 40	0	0	0.00	2.57	19.46	0.00
Mammary Gland Clontech	34.19, 40	14.9	0	7.45	13.00	3.85	28.65
Myometrium	35.76, 40	5.7	0	2.85	2.34	21.37	60.90
Omentum	36.04, 33.62	4.81	21.16	12.99	3.94	12.69	164.78
Ovary	34.29, 32.95	14.02	31.93	22.98	4.34	11.52	264.69
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	38.98, 35.35	0.79	7.32	4.06	1.57	31.85	129.14
Parotid Gland	34.58, 33.83	11.74	18.68	15.21	5.48	9.12	138.78
Placenta Clontech	35.73, 35.66	5.82	6.06	5.94	5.26	9.51	56.46
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 40	0.38	0	0.19	1.23	40.65	7.72
Salivary Gland Clontech	40, 40	0.3	0	0.15	7.31	6.84	1.03
Skeletal Muscle Clontech	40, 40	0	0.28	0.14	1.26	39.68	5.56
Skin	40, 40	0	0.33	0.17	1.21	41.32	6.82
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	40, 40	0	0	0.00	4.92	10.16	0.00
Stomach	40, 36	0	4.92	2.46	2.73	18.32	45.05
Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00

Thymus Clontech	40, 37.06	0	2.56	1.28	9.89	5.06	6.47
Thyroid	40, 40	0	0.31	0.16	2.77	18.05	2.80
Trachea Clontech	40, 40	0.28	0	0.14	9.71	5.15	0.72
Urinary Bladder	40, 34.13	0	15.53	7.77	5.47	9.14	70.98
Uterus	33.21, 32.79	27.27	35.32	31.30	5.34	9.36	293.02
genomic	26.93	1288.98					
b-actin	27.55	878.74					
1.00E+05	20.07	100000					
1.00E+05	20.14	100000					
1.00E+04	23.43	10000					
1.00E+04	23.34	10000					
1.00E+03	26.84	1000					
1.00E+03	27.02	1000					
1.00E+02	31.72	100					
1.00E+02	31.32	100					
1.00E+01	33.78	10					
1.00E+01	35.79	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg614126complfH	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populatio n
colon normal GW98-167	21941	34.6	13.63	27.26	colon normal	
colon tumor GW98-166	21940	35.71	7.35	14.70	colon tumor	-1.85
colon normal GW98-178	22080	40	0	0.00	colon normal	
colon tumor GW98-177	22060	39.81	0.75	1.50	colon tumor	1.50
colon normal GW98-561	23514	38.61	1.45	2.90	colon normal	
colon tumor GW98-560	23513	34.84	11.95	23.90	colon tumor	8.24
colon normal GW98-894	24691	39.05	1.14	2.28	colon normal	
colon tumor GW98-893	24690	40	0	0.00	colon tumor	-2.28
lung normal GW98-3	20742	35.78	7.04	14.08	lung normal	
lung tumor GW98-2	20741	40	0	0.00	lung tumor	-14.08
lung normal GW97-179	20677	33.99	19.21	38.42	lung normal	
lung tumor GW97-178	20676	40	0.49	0.98	lung tumor	-39.20
lung normal GW98-165	21922	39.63	0.82	1.64	lung normal	
lung tumor GW98-164	21921	38.89	1.24	2.48	lung tumor	1.51
lung normal GW98-282	22584	40	0	0.00	lung normal	
lung tumor GW98-281	22583	40	0	0.00	lung tumor	0.00

breast normal GW00-392	28750	32.71	39.28	39.28	breast normal	
breast tumor GW00-391	28746	31.65	70.89	141.78	breast tumor	3.61
breast normal GW00-413	28798	35.83	6.88	6.88	breast normal	
breast tumor GW00-412	28797	33.17	30.3	60.60	breast tumor	8.81
breast normal GW00-235:238	27592-95	36.73	4.16	4.16	breast normal	
breast tumor GW00-231:234	27588-91	35.98	6.33	6.33	breast tumor	1.52
breast normal GW98-621	23656	37.38	2.89	5.78	breast normal	
breast tumor GW98-620	23655	34.95	11.23	22.46	breast tumor	3.89
brain normal BB99-542	25507	32.26	50.34	100.68	brain normal	
brain normal BB99-406	25509	40	0.57	1.14	brain normal	
brain normal BB99-904	25546	34.68	13.04	26.08	brain normal	
brain stage 5 ALZ BB99-874	25502	40	0	0.00	brain stage 5 ALZ	-42.63
brain stage 5 ALZ BB99-887	25503	35.87	6.73	13.46	brain stage 5 ALZ	-3.17
brain stage 5 ALZ BB99-862	25504	39.2	1.05	2.10	brain stage 5 ALZ	-20.30
brain stage 5 ALZ BB99-927	25542	40	0	0.00	brain stage 5 ALZ	-42.63
CT lung KC	normal	39.4	0.93	1.86	CT lung	
lung 26 KC	normal				lung 26	
lung 27 KC	normal	40	0	0.00	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-0.62
lung 28 KC	COPD	40	0	0.00	lung 28	-0.62
lung 23 KC	COPD	40	0	0.00	lung 23	-0.62
lung 25 KC	normal	40	0	0.00	lung 25	
asthmatic lung ODO3112	29321	36.52	4.68	4.68	asthmatic lung	7.55
asthmatic lung ODO3433	29323	40	0	0.00	asthmatic lung	-0.62
asthmatic lung ODO3397	29322	40	0	0.00	asthmatic lung	-0.62
asthmatic lung ODO4928	29325	38.18	1.85	3.70	asthmatic lung	5.97
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		40	0	0.00	endo bFGF	0.00
heart Clontech	normal	40	0	0.00	heart	
heart (T-1) ischemic	29417	40	0	0.00	heart T-1	0.00
heart (T-14) non-obstructive DCM	29422	40	0	0.00	heart T-14	0.00
heart (T-3399) DCM	29426	36.03	6.13	12.26	heart T-3399	12.26
adenoid GW99-269	26162	34.08	18.19	36.38	adenoid	
tonsil GW98-280	22582	37.46	2.77	5.54	tonsil	
T cells PC00314	28453	40	0	0.00	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	

B cells PC00665	28455	34.56	13.99	27.98	B cells	
dendritic cells 28441		40	0	0.00	dendritic cells	
neutrophils	28440	33.76	21.85	21.85	neutrophils	
eosinophils	28446	40	0	0.00	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim		40	0	0.00	BM stim	0.00
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		34.25	16.55	41.38	chondrocytes	
OA Synovium IP12/01	29462	40	0	0.00	OA Synovium	
OA Synovium NP10/01	29461	40	0	0.00	OA Synovium	
OA Synovium NP57/00	28464	33.1	31.54	63.08	OA Synovium	
RA Synovium NP03/01	28466	40	0	0.00	RA Synovium	
RA Synovium NP71/00	28467	40	0	0.00	RA Synovium	
RA Synovium NP45/00	28475	40	0	0.00	RA Synovium	
OA bone (biobank)	29217	40	0	0.00	OA bone (biobank)	
OA bone Sample 1	J. Emory	40	0	0.00	OA bone	
OA bone Sample 2	J. Emory	40	0	0.00	OA bone	
Cartilage (pool)	Normal	40	0	0.00	Cartilage (pool)	
Cartilage (pool)	OA	40	0	0.00	Cartilage (pool)	0.00
PBL uninfected	28441	36.12	5.84	11.68	PBL uninfected	
PBL HIV IIIB	28442	36.1	5.9	11.80	PBL HIV IIIB	1.01
MRC5 uninfected (100%)	29158	40	0	0.00	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	31.83	64.08	128.16	MRC5 HSV strain F	128.16
W12 cells	29179	40	0	0.00	W12 cells	
Keratinocytes	29180	40	0	0.00	Keratinocytes	
B-actin control		27.26	820.77			
genomic		26.18	1496.25			
1.00E+05		19.13	100000			
1.00E+05		19.38	100000			
1.00E+04		22.56	10000			
1.00E+04		22.67	10000			
1.00E+03		26.01	1000			
1.00E+03		26.44	1000			
1.00E+02		30.93	100			
1.00E+02		30.1	100			
1.00E+01		38.59	10			
1.00E+01		33.26	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg614126complfH

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.85
colon tumor	1.50
colon tumor	8.24
colon tumor	-2.28
lung tumor	-14.08
lung tumor	-39.20
lung tumor	1.51
lung tumor	0.00
breast tumor	3.61
breast tumor	8.81
breast tumor	1.52
breast tumor	3.89
brain stage 5 ALZ	-42.63
brain stage 5 ALZ	-3.17
brain stage 5 ALZ	-20.30
brain stage 5 ALZ	-42.63
lung 24	-0.62
lung 28	-0.62
lung 23	-0.62
asthmatic lung	7.55
asthmatic lung	-0.62
asthmatic lung	-0.62
asthmatic lung	5.97
endo VEGF	0.00
endo bFGF	0.00
heart T-1	0.00
heart T-14	0.00
heart T-3399	12.26
BM stim	0.00
osteo undif	0.00
Cartilage (pool)	0.00
PBL HIV IIIB	1.01
MRC5 HSV strain F	128.16

Gene Name sbg120703RNase

- 5 Moderate to low overall expression in normal and disease samples. Highest normal expression in whole brain and salivary gland. Moderate expression in the fetal liver and the thymus. Highest disease expression in 2 of the normal lung samples, one of the lung tumor samples, the normal cartilage pool, and the HSV-infected MRC5 cells. Upregulation in 1 of 4 colon tumors suggests a role in cancer of the colon. Downregulation in 2 of 4 lung tumor samples suggests possible
- 10 implication in lung cancer. Upregulation in 2 of 4 breast tumors implies an involvement in cancers of the breast. Downregulation in 3 of 3 COPD lung samples implies an involvement in COPD. Upregulation in 3 of 3 heart samples implicates this gene in diseases of the heart such as DCM and ischemia. High expression in the OA and RA synovium and the OA bone samples suggests a possible involvement in osteoarthritis and rheumatoid arthritis. Upregulation in HSV implicates this
- 15 gene in herpes simplex virus as a potential host factor. Moderate to low expression in immune cells.

Sample sbg120703RNase	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Averag e GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 36.24	0	2.54	1.27	3.06	16.34	20.75
Subcutaneous Adipose Zenbio	36.58, 40	2.07	0	1.04	0.96	52.36	54.19
Adrenal Gland Clontech	40, 40	0.22	0	0.11	0.61	81.97	9.02
Whole Brain Clontech	28.62, 28.6	245.21	247.41	246.31	7.24	6.91	1701.04
Fetal Brain Clontech	40, 40	0.3	0	0.15	0.48	103.95	15.59
Cerebellum Clontech	40, 40	0.29	0	0.15	2.17	23.04	3.34
Cervix	35.3, 40	4.45	0	2.23	2.42	20.66	45.97
Colon	40, 40	0.26	0	0.13	2.71	18.45	2.40
Endometrium	40, 38.38	0	0.7	0.35	0.73	68.21	23.87
Esophagus	36.11, 37.01	2.74	1.6	2.17	1.37	36.50	79.20
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	39.31, 36.07	0.4	2.8	1.60	2.58	19.38	31.01
Jejunum	34.13, 39.51	8.98	0.36	4.67	6.60	7.58	35.38
Kidney	40, 40	0.48	0	0.24	2.12	23.58	5.66
Liver	34.4, 36.04	7.64	2.86	5.25	1.50	33.33	175.00
Fetal Liver Clontech	31.46, 31.39	44.65	46.4	45.53	10.40	4.81	218.87
Lung	34.21, 35.61	8.59	3.71	6.15	2.57	19.46	119.65
Mammary Gland Clontech	34.9, 35.65	5.67	3.6	4.64	13.00	3.85	17.83
Myometrium	40, 38.99	0	0.49	0.25	2.34	21.37	5.24
Omentum	38.39, 34.35	0.7	7.89	4.30	3.94	12.69	54.51
Ovary	35, 33.21	5.34	15.64	10.49	4.34	11.52	120.85
Pancreas	40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	32.22, 33.49	28.28	13.18	20.73	5.48	9.12	189.14
Placenta Clontech	37, 39.59	1.6	0.34	0.97	5.26	9.51	9.22
Prostate	35.03, 35.75	5.23	3.4	4.32	3.00	16.67	71.92
Rectum	38.25, 40	0.76	0.21	0.49	1.23	40.65	19.72
Salivary Gland Clontech	30.01, 29.73	106.25	125.78	116.02	7.31	6.84	793.54
Skeletal Muscle Clontech	40, 39.16	0.41	0.44	0.43	1.26	39.68	16.87
Skin	37.21, 35.01	1.42	5.31	3.37	1.21	41.32	139.05
Small Intestine Clontech	40, 40	0	0.19	0.10	0.98	51.07	4.85
Spleen	35.4, 35.9	4.2	3.11	3.66	4.92	10.16	37.14
Stomach	36.12, 40	2.73	0.21	1.47	2.73	18.32	26.92
Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00

Thymus Clontech	31.88, 31.42	34.61	45.62	40.12	9.89	5.06	202.81
Thyroid	40, 35.22	0	4.67	2.34	2.77	18.05	42.15
Trachea Clontech	35.38, 37.52	4.26	1.17	2.72	9.71	5.15	13.98
Urinary Bladder	38.77, 40	0.56	0.31	0.44	5.47	9.14	3.98
Uterus	33.66, 37.55	11.93	1.16	6.55	5.34	9.36	61.28
genomic	25.78	1342.66					
b-actin	27.27	551.42					
1.00E+05	19.03	100000					
1.00E+05	19.08	100000					
1.00E+04	22.28	10000					
1.00E+04	22.27	10000					
1.00E+03	25.85	1000					
1.00E+03	25.6	1000					
1.00E+02	30.44	100					
1.00E+02	29.33	100					
1.00E+01	34.4	10					
1.00E+01	34.48	10					
1.00E-00							
1.00E-00							
NTC	40	-1					
NTC	40	0					

Sample sbg120703RNase	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detected/ 50 ng total RNA	Sample	Fold Change in Disease Population
colon normal GW98-167	21941	29.03	142.85	285.70	colon normal	
colon tumor GW98-166	21940	28.31	226.87	453.74	colon tumor	1.59
colon normal GW98-178	22080	33.08	10.78	21.56	colon normal	
colon tumor GW98-177	22060	29.33	118.09	236.18	colon tumor	10.95
colon normal GW98-561	23514	30.02	76.09	152.18	colon normal	
colon tumor GW98-560	23513	30.42	58.89	117.78	colon tumor	-1.29
colon normal GW98-894	24691	29.07	139.29	278.58	colon normal	
colon tumor GW98-893	24690	30.3	63.5	127.00	colon tumor	-2.19
lung normal GW98-3	20742	26.86	574.4	1148.80	lung normal	
lung tumor GW98-2	20741	30.07	73.89	147.78	lung tumor	-7.77
lung normal GW97-179	20677	29.74	90.79	181.58	lung normal	
lung tumor GW97-178	20676	27.63	351.24	702.48	lung tumor	3.87
lung normal GW98-165	21922	26.63	663.94	1327.88	lung normal	
lung tumor GW98-164	21921	29.38	114.52	229.04	lung tumor	-5.80
lung normal GW98-282	22584	30	77.02	154.04	lung normal	
lung tumor GW98-281	22583	29.64	97.04	194.08	lung tumor	1.26
breast normal GW00-392	28750	29.08	138.57	138.57	breast normal	
breast tumor GW00-391	28746	28.77	169.53	339.06	breast tumor	2.45
breast normal GW00-413	28798	32.72	13.55	13.55	breast normal	
breast tumor GW00-412	28797	31.01	40.4	80.80	breast tumor	5.96

breast normal GW00-235:238	27592-95	34.39	4.68	4.68	breast normal	
breast tumor GW00-231:234	27588-91	31.4	31.48	31.48	breast tumor	6.73
breast normal GW98-621	23656	28.54	195.6	391.20	breast normal	
breast tumor GW98-620	23655	30.37	60.84	121.68	breast tumor	-3.21
brain normal BB99-542	25507	32.94	11.79	23.58	brain normal	
brain normal BB99-406	25509	32.22	18.66	37.32	brain normal	
brain normal BB99-904	25546	32.3	17.71	35.42	brain normal	
brain stage 5 ALZ BB99-874	25502	32.82	12.76	25.52	brain stage 5 ALZ	-1.26
brain stage 5 ALZ BB99-887	25503	30.31	63.18	126.36	brain stage 5 ALZ	3.94
brain stage 5 ALZ BB99-862	25504	31.42	31.08	62.16	brain stage 5 ALZ	1.94
brain stage 5 ALZ BB99-927	25542	33.35	9.08	18.16	brain stage 5 ALZ	-1.77
CT lung KC	normal	30.41	59.49	118.98	CT lung	
lung 26 KC	normal				lung 26	
lung 27 KC	normal	37.69	0.57	0.57	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-40.17
lung 28 KC	COPD	40	0	0.00	lung 28	-40.17
lung 23 KC	COPD	40	0	0.00	lung 23	-40.17
lung 25 KC	normal	36.86	0.97	0.97	lung 25	
asthmatic lung ODO3112	29321	33.08	10.79	10.79	asthmatic lung	-3.72
asthmatic lung ODO3433	29323	29.94	80.31	160.62	asthmatic lung	4.00
asthmatic lung ODO3397	29322	29.79	87.94	175.88	asthmatic lung	4.38
asthmatic lung ODO4928	29325	30.08	73.39	146.78	asthmatic lung	3.65
endo cells KC	control	40	0.13	0.13	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	-0.13
endo bFGF KC		40	0.12	0.12	endo bFGF	-1.08
heart Clontech	normal	34.66	3.95	7.90	heart	
heart (T-1) ischemic	29417	30.43	58.48	116.96	heart T-1	14.81
heart (T-14) non-obstructive DCM	29422	30.3	63.76	127.52	heart T-14	16.14
heart (T-3399) DCM	29426	31.14	37.27	74.54	heart T-3399	9.44
adenoid GW99-269	26162	33.15	10.31	20.62	adenoid	
tonsil GW98-280	22582	30.26	65.22	130.44	tonsil	
T cells PC00314	28453	33.29	9.45	18.90	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	32.25	18.35	36.70	B cells	
dendritic cells 28441		30.52	55.34	110.68	dendritic cells	
neutrophils	28440	31.61	27.61	27.61	neutrophils	
eosinophils	28446	33.2	10.01	20.02	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim		40	0	0.00	BM stim	0.00
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		29.65	96.25	240.63	chondrocytes	

OA Synovium IP12/01	29462	28.59	190.09	190.09	OA Synovium	
OA Synovium NP10/01	29461	29.06	140.66	281.32	OA Synovium	
OA Synovium NP57/00	28464	28.38	216.61	433.22	OA Synovium	
RA Synovium NP03/01	28466	29.43	111	222.00	RA Synovium	
RA Synovium NP71/00	28467	28.35	220.48	440.96	RA Synovium	
RA Synovium NP45/00	28475	28.7	176.79	353.58	RA Synovium	
OA bone (biobank)	29217	30.6	52.6	52.60	OA bone (biobank)	
OA bone Sample 1	J. Emory	29.64	97.1	194.20	OA bone	
OA bone Sample 2	J. Emory	30.85	44.71	89.42	OA bone	
Cartilage (pool)	Normal	28.07	264.86	529.72	Cartilage (pool)	
Cartilage (pool)	OA	30.47	56.97	113.94	Cartilage (pool)	-4.65
PBL uninfected	28441	33.41	8.73	17.46	PBL uninfected	
PBL HIV IIIB	28442	32.1	20.17	40.34	PBL HIV IIIB	2.31
MRC5 uninfected (100%)	29158	31.09	38.5	77.00	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	28.24	237.46	474.92	MRC5 HSV strain F	6.17
W12 cells	29179	28.83	162.45	324.90	W12 cells	
Keratinocytes	29180	29.21	127.89	255.78	Keratinocytes	
B-actin control		26.99	528.52			
genomic		25.66	1229.15			
1.00E+05		18.76	100000			
1.00E+05		19.03	100000			
1.00E+04		22.01	10000			
1.00E+04		22.05	10000			
1.00E+03		26.01	1000			
1.00E+03		25.68	1000			
1.00E+02		30.57	100			
1.00E+02		30.32	100			
1.00E+01		32.24	10			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg120703RNase

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.59
colon tumor	10.95
colon tumor	-1.29
colon tumor	-2.19
lung tumor	-7.77

lung tumor	3.87
lung tumor	-5.80
lung tumor	1.26
breast tumor	2.45
breast tumor	5.96
breast tumor	6.73
breast tumor	-3.21
brain stage 5 ALZ	-1.26
brain stage 5 ALZ	3.94
brain stage 5 ALZ	1.94
brain stage 5 ALZ	-1.77
lung 24	-40.17
lung 28	-40.17
lung 23	-40.17
asthmatic lung	-3.72
asthmatic lung	4.00
asthmatic lung	4.38
asthmatic lung	3.65
endo VEGF	-0.13
endo bFGF	-1.08
heart T-1	14.81
heart T-14	16.14
heart T-3399	9.44
BM stim	0.00
osteo undif	0.00
Cartilage (pool)	-4.65
PBL HIV IIIB	2.31
MRC5 HSV strain F	6.17

Gene Name sbg98530TS

5 Moderate overall expression in normal and disease samples. Highest normal expression in whole brain, endometrium, and testis. Moderate expression in normal heart, skeletal muscle, and esophagus. Shows expression in most of the GI tract samples as well as the female reproductive tract samples. Highest disease expression in one of the colon tumor samples, all 3 of the heart samples, and the chondrocytes. Data predominantly shows a muscle-specific pattern of expression.

10 Upregulation in 1 of 4 colon tumors and upregulation in 2 of 4 breast tumors implies an involvement in cancers of the colon and breast. Downregulation in 3 of 3 COPD samples implies a role in chronic obstructive pulmonary disease. Downregulation in HSV implicates involvement in herpes simplex virus as a potential host factor. Moderate to low overall expression in immune cells. High expression in chondrocytes and OA and RA synovium suggests possible involvement in osteoarthritis and rheumatoid arthritis.

15

Sample sbg98530TS	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected/ 50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 36.35	0	4.22	2.11	3.06	16.34	34.48
Subcutaneous Adipose Zenbio	35.78, 40	5.89	0	2.95	0.96	52.36	154.19
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00

Whole Brain Clontech	26.63, 26.42	1253.02	1414.2	1333.61	7.24	6.91	9210.01
Fetal Brain Clontech	40, 37.33	0	2.38	1.19	0.48	103.95	123.70
Cerebellum Clontech	35.9, 40	5.5	0	2.75	2.17	23.04	63.36
Cervix	33.47, 34.27	22.86	14.26	18.56	2.42	20.66	383.47
Colon	34.49, 34.05	12.58	16.28	14.43	2.71	18.45	266.24
Endometrium	33.28, 32.94	25.41	31.15	28.28	0.73	68.21	1929.06
Esophagus	33.61, 32.9	21.02	31.85	26.44	1.37	36.50	964.78
Heart Clontech	33.32, 33.03	24.91	29.42	27.17	1.32	37.88	1028.98
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	35.89, 33.37	5.53	24.14	14.84	2.58	19.38	287.50
Jejunum	31.55, 31.42	70.2	75.71	72.96	6.60	7.58	552.69
Kidney	40, 35.5	0	6.96	3.48	2.12	23.58	82.08
Liver	34.29, 33.63	14.07	20.78	17.43	1.50	33.33	580.83
Fetal Liver Clontech	32.16, 32.92	49.02	31.52	40.27	10.40	4.81	193.61
Lung	40, 35.78	0		2.95	2.57	19.46	57.30
Mammary Gland Clontech	31.42, 32.08	75.62	51.54	63.58	13.00	3.85	244.54
Myometrium	32.93, 32.03	31.21	52.84	42.03	2.34	21.37	897.97
Omentum	35.21, 40	8.23	0	4.12	3.94	12.69	52.22
Ovary	35.36, 35.51	7.53	6.89	7.21	4.34	11.52	83.06
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 37.54	0	2.11	1.06	1.57	31.85	33.60
Parotid Gland	31.67, 31.01	65.33	96.46	80.90	5.48	9.12	738.09
Placenta Clontech	33.13, 32.05	27.88	52.3	40.09	5.26	9.51	381.08
Prostate	35.03, 40	9.13	5.22	7.18	3.00	16.67	119.58
Rectum	40, 35.19	0	8.32	4.16	1.23	40.65	169.11
Salivary Gland Clontech	32.41, 34.06	42.32	16.15	29.24	7.31	6.84	199.97
Skeletal Muscle Clontech	33.93, 33.76	17.41	19.28	18.35	1.26	39.68	727.98
Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	34.11	11.73	15.7	13.72	0.98	51.07	700.46
Spleen	36.08, 40	4.94	0.37	2.66	4.92	10.16	26.98
Stomach	40, 40	0	0	0.00	2.73	18.32	0.00
Testis Clontech	35.54, 33.26	6.79	25.83	16.31	0.57	87.87	1433.22
Thymus Clontech	33.66, 34.12	20.35	15.62	17.99	9.89	5.06	90.93
Thyroid	40, 35.46	0	7.12	3.56	2.77	18.05	64.26
Trachea Clontech	32.08, 31.84	51.54	59.21	55.38	9.71	5.15	285.14
Urinary Bladder	34.75, 36.99	10.8	2.91	6.86	5.47	9.14	62.66
Uterus	31.79, 32.2	60.97	47.95	54.46	5.34	9.36	509.93
genomic	26.8	1133.17					
b-actin	27.6	706.62					
1.00E+05	19.53	100000					
1.00E+05	19.54	100000					
1.00E+04	22.8	10000					
1.00E+04	23.02	10000					
1.00E+03	26.14	1000					
1.00E+03	26.59	1000					

1.00E+02	31.41	100				
1.00E+02	30.97	100				
1.00E+01	40	0				
1.00E+01	35.24	10				
1.00E-00	40	0				
1.00E-00	40	0				
NTC	40	0				
NTC	40	0				

Sample sbg98530TS	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populat ion
colon normal GW98-167	21941	26.26	1792.89	3585.78	colon normal	
colon tumor GW98-166	21940	26.2	1856.22	3712.44	colon tumor	1.04
colon normal GW98-178	22080	27.25	986.8	1973.60	colon normal	
colon tumor GW98-177	22060	26.7	1369.12	2738.24	colon tumor	1.39
colon normal GW98-561	23514	27.55	821.35	1642.70	colon normal	
colon tumor GW98-560	23513	24.64	4748.96	9497.92	colon tumor	5.78
colon normal GW98-894	24691	27.27	971.87	1943.74	colon normal	
colon tumor GW98-893	24690	25.35	3093.47	6186.94	colon tumor	3.18
lung normal GW98-3	20742	27.02	1133.68	2267.36	lung normal	
lung tumor GW98-2	20741	27.26	981.94	1963.88	lung tumor	-1.15
lung normal GW97-179	20677	29.14	315.07	630.14	lung normal	
lung tumor GW97-178	20676	28.15	571.76	1143.52	lung tumor	1.81
lung normal GW98-165	21922	27.86	682.2	1364.40	lung normal	
lung tumor GW98-164	21921	27.45	871.19	1742.38	lung tumor	1.28
lung normal GW98-282	22584	28.12	581.74	1163.48	lung normal	
lung tumor GW98-281	22583	29.32	283.71	567.42	lung tumor	-2.05
breast normal GW00-392	28750	27.85	687.38	687.38	breast normal	
breast tumor GW00-391	28746	26.61	1444.19	2888.38	breast tumor	4.20
breast normal GW00-413	28798	28.43	483.03	483.03	breast normal	
breast tumor GW00-412	28797	25.49	2836.66	5673.32	breast tumor	11.75
breast normal GW00-235:238	27592-95	32.26	48.29	48.29	breast normal	
breast tumor GW00-231:234	27588-91	29.07	328.46	328.46	breast tumor	6.80
breast normal GW98-621	23656	26.82	1279.07	2558.14	breast normal	
breast tumor GW98-620	23655	26.8	1289.27	2578.54	breast tumor	1.01
brain normal BB99-542	25507	29.03	337.63	675.26	brain normal	
brain normal BB99-406	25509	29.19	305.6	611.20	brain normal	
brain normal BB99-904	25546	30.44	144.55	289.10	brain normal	
brain stage 5 ALZ BB99-874	25502	28.47	471.8	943.60	brain stage 5 ALZ	1.80
brain stage 5 ALZ BB99-887	25503	27.3	955.52	1911.04	brain stage 5 ALZ	3.64

brain stage 5 ALZ BB99-862	25504	27.42	891.77	1783.54	brain stage 5 ALZ	3.40
brain stage 5 ALZ BB99-927	25542	29.31	285.16	570.32	brain stage 5 ALZ	1.09
CT lung KC	normal	27.96	643.88	1287.76	CT lung	
lung 26 KC	normal	35.82	5.66	5.66	lung 26	
lung 27 KC	normal	40	0	0.00	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-325.52
lung 28 KC	COPD	35.3	7.73	7.73	lung 28	-42.11
lung 23 KC	COPD	36.67	3.39	3.39	lung 23	-96.02
lung 25 KC	normal	35.11	8.67	8.67	lung 25	
asthmatic lung ODO3112	29321	31.01	102.08	102.08	asthmatic lung	-3.19
asthmatic lung ODO3433	29323	29.76	216.81	433.62	asthmatic lung	1.33
asthmatic lung ODO3397	29322	29.83	208.08	416.16	asthmatic lung	1.28
asthmatic lung ODO4928	29325	30.37	150.17	300.34	asthmatic lung	-1.08
endo cells KC	control	37.54	2	2.00	endo cells	
endo VEGF KC		35.77	5.83	5.83	endo VEGF	2.92
endo bFGF KC		40	0	0.00	endo bFGF	-2.00
heart Clontech	normal	26.09	1982.44	3964.88	heart	
heart (T-1) ischemic	29417	24	6956.27	13912.54	heart T-1	3.51
heart (T-14) non-obstructive DCM	29422	24.55	5010.03	10020.06	heart T-14	2.53
heart (T-3399) DCM	29426	24.05	6766.57	13533.14	heart T-3399	3.41
adenoid GW99-269	26162	30.56	134.11	268.22	adenoid	
tonsil GW98-280	22582	27.94	651.01	1302.02	tonsil	
T cells PC00314	28453	29.8	212.45	424.90	T cells	
PBMNC		33.01	30.69	30.69	PBMNC	
monocyte		33.42	23.9	47.80	monocyte	
B cells PC00665	28455	33.52	22.59	45.18	B cells	
dendritic cells 28441		29.07	329.58	659.16	dendritic cells	
neutrophils	28440	30.39	149	149.00	neutrophils	
eosinophils	28446	35.41	7.25	14.50	eosinophils	
BM unstim		34.24	14.65	14.65	BM unstim	
BM stim		36.61	3.51	3.51	BM stim	-4.17
osteo dif		30.55	135.33	135.33	osteo dif	3.02
osteo undif		32.38	44.88	44.88	osteo undif	
chondrocytes		25.35	3089.54	7723.85	chondrocytes	
OA Synovium IP12/01	29462	28.75	398.53	398.53	OA Synovium	
OA Synovium NP10/01	29461	27.04	1119.77	2239.54	OA Synovium	
OA Synovium NP57/00	28464	28.85	375.92	751.84	OA Synovium	
RA Synovium NP03/01	28466	28.14	574.66	1149.32	RA Synovium	
RA Synovium NP71/00	28467	27.58	806.11	1612.22	RA Synovium	
RA Synovium NP45/00	28475	28.04	611.1	1222.20	RA Synovium	
OA bone (biobank)	29217	30.25	161.3	161.30	OA bone (biobank)	
OA bone Sample 1	J. Emory	31.24	89.29	178.58	OA bone	
OA bone Sample 2	J. Emory	30.98	104.34	208.68	OA bone	

Cartilage (pool)	Normal	29.86	204.47	408.94	Cartilage (pool)	
Cartilage (pool)	OA	29.37	275.09	550.18	Cartilage (pool)	1.35
PBL uninfected	28441	26.45	1598.39	3196.78	PBL uninfected	
PBL HIV IIIB	28442	27.57	814.58	1629.16	PBL HIV IIIB	-1.96
MRC5 uninfected (100%)	29158	25.13	3539.95	7079.90	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	30.49	139.89	279.78	MRC5 HSV strain F	-25.31
W12 cells	29179	26.72	1359.04	2718.08	W12 cells	
Keratinocytes	29180	26.41	1633.77	3267.54	Keratinocytes	
B-actin control		27.87	678.8			
genomic		26.9	1214.71			
1.00E+05		19.86	100000			
1.00E+05		19.82	100000			
1.00E+04		23.15	10000			
1.00E+04		23.21	10000			
1.00E+03		26.62	1000			
1.00E+03		26.79	1000			
1.00E+02		31.2	100			
1.00E+02		32.2	100			
1.00E+01		40	0			
1.00E+01		34.53	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg98530TS

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.04
colon tumor	1.39
colon tumor	5.78
colon tumor	3.18
lung tumor	-1.15
lung tumor	1.81
lung tumor	1.28
lung tumor	-2.05
breast tumor	4.20
breast tumor	11.75
breast tumor	6.80
breast tumor	1.01
brain stage 5 ALZ	1.80
brain stage 5 ALZ	3.64
brain stage 5 ALZ	3.40
brain stage 5 ALZ	1.09
lung 24	-325.52
lung 28	-42.11
lung 23	-96.02
asthmatic lung	-3.19
asthmatic lung	1.33

asthmatic lung	1.28
asthmatic lung	-1.08
endo VEGF	2.92
endo bFGF	-2.00
heart T-1	3.51
heart T-14	2.53
heart T-3399	3.41
BM stim	-4.17
osteo undif	3.02
Cartilage (pool)	1.35
PBL HIV IIIB	-1.96
MRC5 HSV strain F	-25.31

Gene Name sbg563917RDP

- 5 Moderate to low overall expression in normal and disease samples. Highest normal expression in testis liver, trachea, and whole brain. Shows good expression in most of the GI tract samples. Highest disease expression in T cells, B cells, neutrophils, and eosinophils. Upregulation in 1 of 4 breast tumors implies involvement in cancer of the breast. Downregulation in 3 of 3 COPD lungs suggests an involvement in chronic obstructive pulmonary disease. Downregulation in the ischemic heart sample implicates this gene in ischemic heart disease. Downregulation in the VEGF and bFGF-treated endothelial cells suggests a role in angiogenesis. Upregulation in HSV implicates involvement in herpes simplex virus as a potential host factor.
- 10

Sample sbg563917RDP	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Avera ge GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	35.34, 40	3.66	0	1.83	3.06	16.34	29.90
Subcutaneous Adipose Zenbio	40, 40	0		0.00	0.96	52.36	0.00
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	30.09, 30.01	91.85	96.8	94.33	7.24	6.91	651.42
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	35.19, 40	4.03	0	2.02	2.17	23.04	46.43
Cervix	36.08, 40	2.33	0	1.17	2.42	20.66	24.07
Colon	36.07, 35.1	2.35	4.24	3.30	2.71	18.45	60.79
Endometrium	35.01, 40	4.49	0	2.25	0.73	68.21	153.14
Esophagus	34.94, 40	4.68	0	2.34	1.37	36.50	85.40
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	35.24, 40	3.89	0	1.95	2.58	19.38	37.69
Jejunum	35.37, 33.35	3.6	12.44	8.02	6.60	7.58	60.76
Kidney	40, 34.97	0	4.6	2.30	2.12	23.58	54.25
Liver	33.51, 34.6	11.25	5.78	8.52	1.50	33.33	283.83
Fetal Liver Clontech	33.19, 35.54	13.75	3.25	8.50	10.40	4.81	40.87
Lung	34.32	6.84	2.28	4.56	2.57	19.46	88.72
Mammary Gland Clontech	40, 35.14	0	4.15	2.08	13.00	3.85	7.98

Myometrium	40, 40	0	0.09	0.05	2.34	21.37	0.96
Omentum	36.17, 33.01	2.2	15.32	8.76	3.94	12.69	111.17
Ovary	40, 40	0	0	0.00	4.34	11.52	0.00
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	35.43, 39.81	3.46	0.24	1.85	5.48	9.12	16.88
Placenta Clontech	33.7, 35.45	10.02	3.42	6.72	5.26	9.51	63.88
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 40	0	0	0.00	1.23	40.65	0.00
Salivary Gland Clontech	34.89, 40	4.83	0	2.42	7.31	6.84	16.52
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	35.01, 33.36	4.48	12.38	8.43	4.92	10.16	85.67
Stomach	33.38, 34.18	12.18	7.48	9.83	2.73	18.32	180.04
Testis Clontech	34.25, 32.86	7.17	16.84	12.01	0.57	87.87	1054.92
Thymus Clontech	32.14, 33.25	26.17	13.24	19.71	9.89	5.06	99.62
Thyroid	40, 40	0	0.09	0.05	2.77	18.05	0.81
Trachea Clontech	31.41, 31	41.04	52.65	46.85	9.71	5.15	241.22
Urinary Bladder	40, 35.05	0	4.38	2.19	5.47	9.14	20.02
Uterus	33.77, 33.41	9.62	12	10.81	5.34	9.36	101.22
genomic	26.54	813.56					
b-actin	27.39	481.34					
1.00E+05	18.71	100000					
1.00E+05	18.92	100000					
1.00E+04	22.44	10000					
1.00E+04	22.11	10000					
1.00E+03	26.05	1000					
1.00E+03	26.11	1000					
1.00E+02	30.4	100					
1.00E+02	30.17	100					
1.00E+01	33.87	10					
1.00E+01	33.26	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg563917RDP	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Population
colon normal GW98-167	21941	30.39	148.35	296.70	colon normal	

colon tumor GW98-166	21940	30.93	110.14	220.28	colon tumor	-1.35
colon normal GW98-178	22080	32.93	36.71	73.42	colon normal	
colon tumor GW98-177	22060	34.8	13.09	26.18	colon tumor	-2.80
colon normal GW98-561	23514	31.41	84.68	169.36	colon normal	
colon tumor GW98-560	23513	32.09	58.33	116.66	colon tumor	-1.45
colon normal GW98-894	24691	30.02	182.15	364.30	colon normal	
colon tumor GW98-893	24690	31.12	99.26	198.52	colon tumor	-1.84
lung normal GW98-3	20742	28.4	443.99	887.98	lung normal	
lung tumor GW98-2	20741	33.59	25.44	50.88	lung tumor	-17.45
lung normal GW97-179	20677	28.63	391.85	783.70	lung normal	
lung tumor GW97-178	20676	29.16	292.08	584.16	lung tumor	-1.34
lung normal GW98-165	21922	29.13	296.8	593.60	lung normal	
lung tumor GW98-164	21921	30.22	163.43	326.86	lung tumor	-1.82
lung normal GW98-282	22584	31.71	71.72	143.44	lung normal	
lung tumor GW98-281	22583	31.74	70.77	141.54	lung tumor	-1.01
breast normal GW00-392	28750	31.49	81.02	81.02	breast normal	
breast tumor GW00-391	28746	33.58	25.62	51.24	breast tumor	-1.58
breast normal GW00-413	28798	35.07	11.31	11.31	breast normal	
breast tumor GW00-412	28797	31.99	61.52	123.04	breast tumor	10.88
breast normal GW00-235:238	27592-95	35.63	8.3	8.30	breast normal	
breast tumor GW00-231:234	27588-91	34.33	16.97	16.97	breast tumor	2.04
breast normal GW98-621	23656	32.07	58.95	117.90	breast normal	
breast tumor GW98-620	23655	32.71	41.33	82.66	breast tumor	-1.43
brain normal BB99-542	25507	30.16	168.86	337.72	brain normal	
brain normal BB99-406	25509	31.12	99.35	198.70	brain normal	
brain normal BB99-904	25546	31.14	98.44	196.88	brain normal	
brain stage 5 ALZ BB99-874	25502	33.16	32.39	64.78	brain stage 5 ALZ	-3.77
brain stage 5 ALZ BB99-887	25503	29.32	267.28	534.56	brain stage 5 ALZ	2.19
brain stage 5 ALZ BB99-862	25504	30.36	150.72	301.44	brain stage 5 ALZ	1.23
brain stage 5 ALZ BB99-927	25542	30.1	174.01	348.02	brain stage 5 ALZ	1.42
CT lung KC	normal	31.06	102.88	205.76	CT lung	
lung 26 KC	normal	32.15	56.21	56.21	lung 26	
lung 27 KC	normal	35.96	6.92	6.92	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-70.34
lung 28 KC	COPD	36.21	6.05	6.05	lung 28	-11.63
lung 23 KC	COPD	34.83	12.87	12.87	lung 23	-5.47
lung 25 KC	normal	34.89	12.45	12.45	lung 25	
asthmatic lung ODO3112	29321	32.57	44.76	44.76	asthmatic lung	-1.57
asthmatic lung ODO3433	29323	32.4	49.04	98.08	asthmatic lung	1.39
asthmatic lung ODO3397	29322	31.79	68.64	137.28	asthmatic lung	1.95
asthmatic lung ODO4928	29325	31.34	88.11	176.22	asthmatic lung	2.51
endo cells KC	control	35.77	7.68	7.68	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	-7.68

endo bFGF KC		40	0	0.00	endo bFGF	-7.68
heart Clontech	normal	31.09	100.75	201.50	heart	
heart (T-1) ischemic	29417	34.75	13.46	26.92	heart T-1	-7.49
heart (T-14) non-obstructive DCM	29422	33.69	24.17	48.34	heart T-14	-4.17
heart (T-3399) DCM	29426	33.48	27.16	54.32	heart T-3399	-3.71
adenoid GW99-269	26162	30.49	140.7	281.40	adenoid	
tonsil GW98-280	22582	30.07	177.32	354.64	tonsil	
T cells PC00314	28453	27.79	622.1	1244.20	T cells	
PBMNC		36.19	6.11	6.11	PBMNC	
monocyte		33.24	30.91	61.82	monocyte	
B cells PC00665	28455	26.37	1355.2	2710.40	B cells	
dendritic cells 28441		28.69	378.62	757.24	dendritic cells	
neutrophils	28440	23.28	7420.47	7420.47	neutrophils	
eosinophils	28446	25.33	2408.94	4817.88	eosinophils	
BM unstim		32.24	53.57	53.57	BM unstim	
BM stim		31.92	64.05	64.05	BM stim	1.20
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		37.59	2.82	7.05	chondrocytes	
OA Synovium IP12/01	29462	31.77	69.48	69.48	OA Synovium	
OA Synovium NP10/01	29461	31.16	96.93	193.86	OA Synovium	
OA Synovium NP57/00	28464	30.84	115.69	231.38	OA Synovium	
RA Synovium NP03/01	28466	30.96	108.37	216.74	RA Synovium	
RA Synovium NP71/00	28467	29.2	285.91	571.82	RA Synovium	
RA Synovium NP45/00	28475	29.87	198.12	396.24	RA Synovium	
OA bone (biobank)	29217	29.67	220.64	220.64	OA bone (biobank)	
OA bone Sample 1	J. Emory	30.54	136.41	272.82	OA bone	
OA bone Sample 2	J. Emory	29.38	259.07	518.14	OA bone	
Cartilage (pool)	Normal	31.34	87.88	175.76	Cartilage (pool)	
Cartilage (pool)	OA	32.9	37.23	74.46	Cartilage (pool)	-2.36
PBL uninfected	28441	30.55	135.85	271.70	PBL uninfected	
PBL HIV IIIB	28442	31.02	104.8	209.60	PBL HIV IIIB	-1.30
MRC5 uninfected (100%)	29158	35.11	11.06	22.12	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	29.63	226.14	452.28	MRC5 HSV strain F	20.45
W12 cells	29179	37.87	2.42	4.84	W12 cells	
Keratinocytes	29180	36.14	6.26	12.52	Keratinocytes	
B-actin control		27.14	887.42			
genomic		26.16	1520.17			
1.00E+05		19.22	100000			
1.00E+05		19.2	100000			
1.00E+04		22.49	10000			
1.00E+04		22.62	10000			
1.00E+03		26.23	1000			
1.00E+03		26.05	1000			
1.00E+02		30.26	100			

1.00E+02		31.03	100			
1.00E+01		38.68	10			
1.00E+01		33.47	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg563917RDP

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.35
colon tumor	-2.80
colon tumor	-1.45
colon tumor	-1.84
lung tumor	-17.45
lung tumor	-1.34
lung tumor	-1.82
lung tumor	-1.01
breast tumor	-1.58
breast tumor	10.88
breast tumor	2.04
breast tumor	-1.43
brain stage 5 ALZ	-3.77
brain stage 5 ALZ	2.19
brain stage 5 ALZ	1.23
brain stage 5 ALZ	1.42
lung 24	-70.34
lung 28	-11.63
lung 23	-5.47
asthmatic lung	-1.57
asthmatic lung	1.39
asthmatic lung	1.95
asthmatic lung	2.51
endo VEGF	-7.68
endo bFGF	-7.68
heart T-1	-7.49
heart T-14	-4.17
heart T-3399	-3.71
BM stim	1.20
osteo undif	0.00
Cartilage (pool)	-2.36
PBL HIV IIIB	-1.30
MRC5 HSV strain F	20.45

5 Gene Name sbg618069LRR

Low overall expression in normal and disease samples. Highest normal expression in whole brain, fetal brain, cerebellum, and thymus. Highest disease expression in one of the colon tumor samples, one of the lung tumor samples, and the uninfected PBL cells. Downregulation in 2 of 4 colon tumors suggests a role in cancer of the colon. Upregulation in 1 of 4 lung tumors and upregulation in 2 of 4 breast tumors suggest roles in cancers of the lung and breast. Downregulation in 3 of 3 COPD lung samples implicates a role for this gene in COPD. Upregulation in the stimulated bone marrow. Downregulation in an HIV-infected cell line as well as moderate expression in immune

cells suggests an involvement in HIV. Upregulation in HSV implicates involvement in herpes simplex virus as a potential host factor.

Sample sbg618069LRR	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	35.24, 34.33	4.38	7.65	6.02	3.06	16.34	98.28
Subcutaneous Adipose Zenbio	40, 40	0	0.08	0.04	0.96	52.36	2.09
Adrenal Gland Clontech	39.9, 38.74	0.13	0.51	0.32	0.61	81.97	26.23
Whole Brain Clontech	27.02, 26.51	673.36	916.93	795.15	7.24	6.91	5491.33
Fetal Brain Clontech	40, 40	0.13	6.01	3.07	0.48	103.95	319.13
Cerebellum Clontech	32.15, 32.13	28.98	29.44	29.21	2.17	23.04	673.04
Cervix	40, 40	0	0	0.00	2.42	20.66	0.00
Colon	36.53, 39.88	1.98	0.25	1.12	2.71	18.45	20.57
Endometrium	37.98, 40	0.82	0.19	0.51	0.73	68.21	34.45
Esophagus	38.86, 40	0.48	0.15	0.32	1.37	36.50	11.50
Heart Clontech	34.17, 34.72	8.41	6.03	7.22	1.32	37.88	273.48
Hypothalamus	40, 40	0	0.07	0.04	0.32	155.28	5.43
Ileum	40, 40	0.17	0.11	0.14	2.58	19.38	2.71
Jejunum	33.07, 34.34	16.52	7.58	12.05	6.60	7.58	91.29
Kidney	36.05, 40	2.67	0.21	1.44	2.12	23.58	33.96
Liver	38.72, 40	0.52	0.61	0.57	1.50	33.33	18.83
Fetal Liver Clontech	33.28, 36.35	14.52	2.22	8.37	10.40	4.81	40.24
Lung	40, 40	0.13	0.08	0.11	2.57	19.46	2.04
Mammary Gland Clontech	40, 34.19	0	8.33	4.17	13.00	3.85	16.02
Myometrium	40, 40	0.28	0	0.14	2.34	21.37	2.99
Omentum	35.01, 35.36	5.04	4.07	4.56	3.94	12.69	57.80
Ovary	34.24, 40	8.07	0.26	4.17	4.34	11.52	47.98
Pancreas	40, 40	0.11	0.13	0.12	0.81	61.80	7.42
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	34.01, 34.28	9.31	7.9	8.61	5.48	9.12	78.51
Placenta Clontech	40, 40	0	0.07	0.04	5.26	9.51	0.33
Prostate	40, 39.13	0.15	0.4	0.28	3.00	16.67	4.58
Rectum	40, 39.55	0.21	0.31	0.26	1.23	40.65	10.57
Salivary Gland Clontech	32.35, 33.08	25.74	16.45	21.10	7.31	6.84	144.29
Skeletal Muscle Clontech	34.78, 40	5.81	0.27	3.04	1.26	39.68	120.63
Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	40, 40	0.16	0	0.08	0.98	51.07	4.09
Spleen	35.59, 40	3.53	0.59	2.06	4.92	10.16	20.93
Stomach	36.73, 40	1.76	0.11	0.94	2.73	18.32	17.12
Testis Clontech	37.91, 40	0.86	0.1	0.48	0.57	87.87	42.18

Thymus Clontech	30.22, 29.94	94.88	112.23	103.56	9.89	5.06	523.53
Thyroid	35.15, 40	4.62	0	2.31	2.77	18.05	41.70
Trachea Clontech	33.49, 34.21	12.75	8.22	10.49	9.71	5.15	53.99
Urinary Bladder	40, 40	0.09	0.08	0.09	5.47	9.14	0.78
Uterus	35.26, 33.03	4.31	16.97	10.64	5.34	9.36	99.63
genomic	26.04	1229.54					
b-actin	27.25	584.19					
1.00E+05	19.09	100000					
1.00E+05	19.04	100000					
1.00E+04	22.35	10000					
1.00E+04	22.35	10000					
1.00E+03	26.07	1000					
1.00E+03	26.26	1000					
1.00E+02	30.64	100					
1.00E+02	30.38	100					
1.00E+01	34.04	10					
1.00E+01	33.52	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg618069LRR	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	29.52	176.51	353.02	colon normal	
colon tumor GW98-166	21940	33.45	18.5	37.00	colon tumor	-9.54
colon normal GW98-178	22080	31.82	47.14	94.28	colon normal	
colon tumor GW98-177	22060	29.68	160.67	321.34	colon tumor	3.41
colon normal GW98-561	23514	30.33	110.78	221.56	colon normal	
colon tumor GW98-560	23513	33.11	22.39	44.78	colon tumor	-4.95
colon normal GW98-894	24691	28.1	396.95	793.90	colon normal	
colon tumor GW98-893	24690	26.93	779.99	1559.98	colon tumor	1.96
lung normal GW98-3	20742	30.41	105.78	211.56	lung normal	
lung tumor GW98-2	20741	26.28	1128.28	2256.56	lung tumor	10.67
lung normal GW97-179	20677	29.28	201.91	403.82	lung normal	
lung tumor GW97-178	20676	28.35	345.36	690.72	lung tumor	1.71
lung normal GW98-165	21922	28.42	331.95	663.90	lung normal	
lung tumor GW98-164	21921	30.98	76.05	152.10	lung tumor	-4.36
lung normal GW98-282	22584	34.15	12.36	24.72	lung normal	
lung tumor GW98-281	22583	32.08	40.6	81.20	lung tumor	3.28
breast normal GW00-392	28750	29.67	161.68	161.68	breast normal	
breast tumor GW00-391	28746	28.98	239.65	479.30	breast tumor	2.96
breast normal GW00-413	28798	31.78	48.04	48.04	breast normal	

breast tumor GW00-412	28797	29.69	159.55	319.10	breast tumor	6.64
breast normal GW00-235:238	27592-95	34.18	12.14	12.14	breast normal	
breast tumor GW00-231:234	27588-91	29.2	211.28	211.28	breast tumor	17.40
breast normal GW98-621	23656	29.72	157.4	314.80	breast normal	
breast tumor GW98-620	23655	31.12	70.17	140.34	breast tumor	-2.24
brain normal BB99-542	25507	30.81	83.89	167.78	brain normal	
brain normal BB99-406	25509	31.02	74.28	148.56	brain normal	
brain normal BB99-904	25546	31.39	60.08	120.16	brain normal	
brain stage 5 ALZ BB99-874	25502	32.54	31.07	62.14	brain stage 5 ALZ	-2.34
brain stage 5 ALZ BB99-887	25503	30.65	92.1	184.20	brain stage 5 ALZ	1.27
brain stage 5 ALZ BB99-862	25504	31.68	50.92	101.84	brain stage 5 ALZ	-1.43
brain stage 5 ALZ BB99-927	25542	31.39	60.36	120.72	brain stage 5 ALZ	-1.21
CT lung KC	normal	30.47	101.87	203.74	CT lung	
lung 26 KC	normal				lung 26	
lung 27 KC	normal	39.27	0.65	0.65	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-68.13
lung 28 KC	COPD	37.38	1.93	1.93	lung 28	-35.30
lung 23 KC	COPD	34.28	11.47	11.47	lung 23	-5.94
lung 25 KC	normal	40	0	0.00	lung 25	
asthmatic lung ODO3112	29321	33.17	21.73	21.73	asthmatic lung	-3.14
asthmatic lung ODO3433	29323	32.35	34.64	69.28	asthmatic lung	1.02
asthmatic lung ODO3397	29322	30.83	83.1	166.20	asthmatic lung	2.44
asthmatic lung ODO4928	29325	30.94	77.99	155.98	asthmatic lung	2.29
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		40	0	0.00	endo bFGF	0.00
heart Clontech	normal	30.52	99.45	198.90	heart	
heart (T-1) ischemic	29417	28.78	270.18	540.36	heart T-1	2.72
heart (T-14) non-obstructive DCM	29422	29.62	166.76	333.52	heart T-14	1.68
heart (T-3399) DCM	29426	30.05	129.76	259.52	heart T-3399	1.30
adenoid GW99-269	26162	29.05	230.93	461.86	adenoid	
tonsil GW98-280	22582	29.77	152.22	304.44	tonsil	
T cells PC00314	28453	31.6	53.48	106.96	T cells	
PBMNC		39.8	0.48	0.48	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	31.56	54.77	109.54	B cells	
dendritic cells 28441		34.09	12.8	25.60	dendritic cells	
neutrophils	28440	34.03	13.21	13.21	neutrophils	
eosinophils	28446	40	0	0.00	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim		35.71	5.04	5.04	BM stim	5.04
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	

chondrocytes		33.5	17.89	44.73	chondrocytes	
OA Synovium IP12/01	29462	32.24	37.02	37.02	OA Synovium	
OA Synovium NP10/01	29461	27.95	434.95	869.90	OA Synovium	
OA Synovium NP57/00	28464	30.9	79.82	159.64	OA Synovium	
RA Synovium NP03/01	28466	31.79	47.9	95.80	RA Synovium	
RA Synovium NP71/00	28467	33.06	23.05	46.10	RA Synovium	
RA Synovium NP45/00	28475	32.76	27.41	54.82	RA Synovium	
OA bone (biobank)	29217	32.02	42.02	42.02	OA bone (biobank)	
OA bone Sample 1	J. Emory	31.32	62.63	125.26	OA bone	
OA bone Sample 2	J. Emory	33.13	22.24	44.48	OA bone	
Cartilage (pool)	Normal	30.76	86.51	173.02	Cartilage (pool)	
Cartilage (pool)	OA	33.13	22.15	44.30	Cartilage (pool)	-3.91
PBL uninfected	28441	26.78	847.01	1694.02	PBL uninfected	
PBL HIV IIIB	28442	28.21	374.26	748.52	PBL HIV IIIB	-2.26
MRC5 uninfected (100%)	29158	40	0	0.00	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	31.26	64.96	129.92	MRC5 HSV strain F	129.92
W12 cells	29179	40	0	0.00	W12 cells	
Keratinocytes	29180	39.77	0.49	0.98	Keratinocytes	
B-actin control		27.18	675.17			
genomic		25.96	1358.6			
1.00E+05		18.58	100000			
1.00E+05		18.53	100000			
1.00E+04		22.04	10000			
1.00E+04		22.1	10000			
1.00E+03		25.85	1000			
1.00E+03		26.11	1000			
1.00E+02		34.02	100			
1.00E+02		30.53	100			
1.00E+01		32.98	10			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		38.21	1			
NTC		40	0			

Gene Name sbg618069LRR

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-9.54
colon tumor	3.41
colon tumor	-4.95
colon tumor	1.96
lung tumor	10.67
lung tumor	1.71
lung tumor	-4.36
lung tumor	3.28

breast tumor	2.96
breast tumor	6.64
breast tumor	17.40
breast tumor	-2.24
brain stage 5 ALZ	-2.34
brain stage 5 ALZ	1.27
brain stage 5 ALZ	-1.43
brain stage 5 ALZ	-1.21
lung 24	-68.13
lung 28	-35.30
lung 23	-5.94
asthmatic lung	-3.14
asthmatic lung	1.02
asthmatic lung	2.44
asthmatic lung	2.29
endo VEGF	0.00
endo bFGF	0.00
heart T-1	2.72
heart T-14	1.68
heart T-3399	1.30
BM stim	5.04
osteo dif	0.00
Cartilage (pool)	-3.91
PBL HIV IIIB	-2.26
MRC5 HSV strain F	129.92

Gene Name sbg934114Relaxin

- 5 Low overall expression in normal and disease samples. Highest normal expression in testis, liver, and whole brain. Highest disease expression in 3 of the normal lung samples, one of the normal tumor samples, the HSV-infected MRC5 cells, the adenoid, and the T cells. Highest disease expression in 2 of the normal lung samples, one of the lung tumor samples, 1 of the normal breast samples, 1 of the breast tumor samples, and the uninfected PBL samples. Downregulation in 1 of 4 colon tumors and downregulation in 2 of 4 lung tumors imply roles in cancers of the colon and lung.
- 10 Downregulation in 3 of 3 COPD lung samples and upregulation in 3 of 4 asthmatic lung samples implicates this gene in COPD and asthma. Upregulation in 2 of 3 heart samples proposes roles in non-obstructive and obstructive DCM. Downregulation in the OA cartilage pool and low expression in RA and OA synovium, OA bone, and chondrocytes suggests an involvement in osteoarthritis and rheumatoid arthritis. Downregulation in an HIV-infected primary cell line suggests an involvement
- 15 in HIV. Upregulation in HSV implicates involvement in herpes simplex virus as a potential host factor.

Sample sbg934114Relaxin	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	37.4, 40	5.41	0	2.71	3.06	16.34	44.20

Subcutaneous Adipose Zenbio	40, 40	0.73	0	0.37	0.96	52.36	19.11
Adrenal Gland Clontech	40, 40	0.73	0.69	0.71	0.61	81.97	58.20
Whole Brain Clontech	33.52, 34.72	47.76	24.26	36.01	7.24	6.91	248.69
Fetal Brain Clontech	39.51, 40	1.65	0.86	1.26	0.48	103.95	130.46
Cerebellum Clontech	40, 39.84	0.99	1.37	1.18	2.17	23.04	27.19
Cervix	40, 40	1.05	0	0.53	2.42	20.66	10.85
Colon	40, 37.31	0	5.7	2.85	2.71	18.45	52.58
Endometrium	40, 40	0	0	0.00	0.73	68.21	0.00
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	38.11, 40	3.63	1.31	2.47	1.32	37.88	93.56
Hypothalamus	40, 40	0	1.06	0.53	0.32	155.28	82.30
Ileum	40, 36.79	0	7.62	3.81	2.58	19.38	73.84
Jejunum	35.14, 35.9	19.25	12.54	15.90	6.60	7.58	120.42
Kidney	40, 40	0	0	0.00	2.12	23.58	0.00
Liver	37.25, 35.17	5.88	18.92	12.40	1.50	33.33	413.33
Fetal Liver Clontech	40, 37.38	0.73	5.47	3.10	10.40	4.81	14.90
Lung	37.07, 40	6.52	0	3.26	2.57	19.46	63.42
Mammary Gland Clontech	40, 40	0	0	0.00	13.00	3.85	0.00
Myometrium	37.95, 40	3.98	0	1.99	2.34	21.37	42.52
Omentum	36.24, 37.04	10.39	6.63	8.51	3.94	12.69	107.99
Ovary	35.29, 36.26	17.66	10.28	13.97	4.34	11.52	160.94
Pancreas	39.48, 40	1.69	0	0.85	0.81	61.80	52.22
Head of Pancreas	36.17, 39.82	10.79	1.39	6.09	1.57	31.85	193.95
Parotid Gland	40, 38.66	0	2.67	1.34	5.48	9.12	12.18
Placenta Clontech	40, 36.57	0	8.63	4.32	5.26	9.51	41.02
Prostate	36.91, 40	7.14	0	3.57	3.00	16.67	59.50
Rectum	40, 37.34	0	5.61	2.81	1.23	40.65	114.02
Salivary Gland Clontech	40, 40	0	0	0.00	7.31	6.84	0.00
Skeletal Muscle Clontech	40, 39.45	0	1.71	0.86	1.26	39.68	33.93
Skin	39.2, 40	1.98	0	0.99	1.21	41.32	40.91
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	36, 40	11.84	0	5.92	4.92	10.16	60.16
Stomach	35.48, 39.19	15.9	1.98	8.94	2.73	18.32	163.74
Testis Clontech	40, 36.09	0	11.27	5.64	0.57	87.87	495.17
Thymus Clontech	34.34, 36.66	30.03	8.2	19.12	9.89	5.06	96.64
Thyroid	40, 40	0	0	0.00	2.77	18.05	0.00
Trachea Clontech	40, 37.8	0	4.33	2.17	9.71	5.15	11.15
Urinary Bladder	40, 40	0	0	0.00	5.47	9.14	0.00
Uterus	37.11, 35.16	6.36	18.96	12.66	5.34	9.36	118.54
genomic	27.61	1307.98					
b-actin	27.15	1697.68					
1.00E+05	19.88	100000					
1.00E+05	20.05	100000					
1.00E+04	24.01	10000					

1.00E+04	23.92	10000					
1.00E+03	27.98	1000					
1.00E+03	27.6	1000					
1.00E+02	32.89	100					
1.00E+02	32.2	100					
1.00E+01	36.1	10					
1.00E+01							
1.00E-00							
1.00E-00							
NTC	40	0					
NTC	40	0					

Sample sbg934114Relaxin	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	36.1	22.33	44.66	colon normal	
colon tumor GW98-166	21940	36.47	18.37	36.74	colon tumor	-1.22
colon normal GW98-178	22080	35.7	27.58	55.16	colon normal	
colon tumor GW98-177	22060	38.05	7.98	15.96	colon tumor	-3.46
colon normal GW98-561	23514	33.57	84.85	169.70	colon normal	
colon tumor GW98-560	23513	37.66	9.8	19.60	colon tumor	-8.66
colon normal GW98-894	24691	36.39	19.09	38.18	colon normal	
colon tumor GW98-893	24690	36.43	18.74	37.48	colon tumor	-1.02
lung normal GW98-3	20742	32.48	150.6	301.20	lung normal	
lung tumor GW98-2	20741	36.65	16.64	33.28	lung tumor	-9.05
lung normal GW97-179	20677	33.22	102.07	204.14	lung normal	
lung tumor GW97-178	20676	32.31	164.63	329.26	lung tumor	1.61
lung normal GW98-165	21922	32.08	185.96	371.92	lung normal	
lung tumor GW98-164	21921	35.14	37.09	74.18	lung tumor	-5.01
lung normal GW98-282	22584	36.41	18.93	37.86	lung normal	
lung tumor GW98-281	22583	35.24	35.13	70.26	lung tumor	1.86
breast normal GW00-392	28750	34.04	66.25	66.25	breast normal	
breast tumor GW00-391	28746	37.9	8.61	17.22	breast tumor	-3.85
breast normal GW00-413	28798	36.36	19.44	19.44	breast normal	
breast tumor GW00-412	28797	36.79	15.49	30.98	breast tumor	1.59
breast normal GW00-235:238	27592-95	36.91	14.52	14.52	breast normal	
breast tumor GW00-231:234	27588-91	35.43	31.71	31.71	breast tumor	2.18
breast normal GW98-621	23656	36.26	20.51	41.02	breast normal	
breast tumor GW98-620	23655	35.76	26.68	53.36	breast tumor	1.30
brain normal BB99-542	25507	37.99	8.21	16.42	brain normal	
brain normal BB99-406	25509	40	1.41	2.82	brain normal	
brain normal BB99-904	25546	40	0	0.00	brain normal	
brain stage 5 ALZ BB99-	25502	38.65	5.82	11.64	brain stage 5 ALZ	1.81

874						
brain stage 5 ALZ BB99-887	25503	37	13.9	27.80	brain stage 5 ALZ	4.33
brain stage 5 ALZ BB99-862	25504	37.4	11.24	22.48	brain stage 5 ALZ	3.51
brain stage 5 ALZ BB99-927	25542	38	8.19	16.38	brain stage 5 ALZ	2.55
CT lung KC	normal	35.32	33.59	67.18	CT lung	
lung 26 KC	normal	37.02	13.72	13.72	lung 26	
lung 27 KC	normal	40	0	0.00	lung 27	
lung 24 KC	COPD	39.97	2.78	2.78	lung 24	-7.81
lung 28 KC	COPD	40	0	0.00	lung 28	-21.71
lung 23 KC	COPD	39.06	4.67	4.67	lung 23	-4.65
lung 25 KC	normal	38.61	5.92	5.92	lung 25	
asthmatic lung ODO3112	29321	36.02	23.31	23.31	asthmatic lung	1.07
asthmatic lung ODO3433	29323	34.12	63.36	126.72	asthmatic lung	5.84
asthmatic lung ODO3397	29322	33.99	68.06	136.12	asthmatic lung	6.27
asthmatic lung ODO4928	29325	33.77	76.08	152.16	asthmatic lung	7.01
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		38.16	7.54	7.54	endo bFGF	7.54
heart Clontech	normal	40	0	0.00	heart	
heart (T-1) ischemic	29417	40	1.36	2.72	heart T-1	2.72
heart (T-14) non-obstructive DCM	29422	36.31	20.01	40.02	heart T-14	40.02
heart (T-3399) DCM	29426	37.17	12.7	25.40	heart T-3399	25.40
adenoid GW99-269	26162	33.33	96.07	192.14	adenoid	
tonsil GW98-280	22582	34.86	42.85	85.70	tonsil	
T cells PC00314	28453	33.48	88.65	177.30	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	32.44	153.68	307.36	B cells	
dendritic cells 28441		35.78	26.47	52.94	dendritic cells	
neutrophils	28440	36.18	21.43	21.43	neutrophils	
eosinophils	28446	39.2	4.34	8.68	eosinophils	
BM unstim		39.56	3.6	3.60	BM unstim	
BM stim		40	1.34	1.34	BM stim	-2.69
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		36.64	16.79	41.98	chondrocytes	
OA Synovium IP12/01	29462	34.75	45.45	45.45	OA Synovium	
OA Synovium NP10/01	29461	36.02	23.28	46.56	OA Synovium	
OA Synovium NP57/00	28464	34.24	59.37	118.74	OA Synovium	
RA Synovium NP03/01	28466	37.88	8.71	17.42	RA Synovium	
RA Synovium NP71/00	28467	36.02	23.22	46.44	RA Synovium	
RA Synovium NP45/00	28475	34.9	41.9	83.80	RA Synovium	
OA bone (biobank)	29217	33.59	83.75	83.75	OA bone (biobank)	
OA bone Sample 1	J. Emory	37.31	11.8	23.60	OA bone	

OA bone Sample 2	J. Emory	37.47	10.81	21.62	OA bone	
Cartilage (pool)	Normal	34.61	49.07	98.14	Cartilage (pool)	
Cartilage (pool)	OA	40	0	0.00	Cartilage (pool)	-98.14
PBL uninfected	28441	33.86	72.8	145.60	PBL uninfected	
PBL HIV IIIB	28442	37.08	13.28	26.56	PBL HIV IIIB	-5.48
MRC5 uninfected (100%)	29158	39.01	4.81	9.62	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	31.5	252.68	505.36	MRC5 HSV strain F	52.53
W12 cells	29179	39.84	3.1	6.20	W12 cells	
Keratinocytes	29180	39.07	4.64	9.28	Keratinocytes	
B-actin control		27.9	1683.49			
genomic		28.13	1492.71			
1.00E+05		20.5	100000			
1.00E+05		20.61	100000			
1.00E+04		24.56	10000			
1.00E+04		24.17	10000			
1.00E+03		28.14	1000			
1.00E+03		28.32	1000			
1.00E+02		34.26	100			
1.00E+02		32.76	100			
1.00E+01		38.07	10			
1.00E+01		37.53	10			
1.00E-00		40	0			
1.00E-00		40	1			
NTC		38.42	-1			

Gene Name sbg934114Relaxin

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.22
colon tumor	-3.46
colon tumor	-8.66
colon tumor	-1.02
lung tumor	-9.05
lung tumor	1.61
lung tumor	-5.01
lung tumor	1.86
breast tumor	-3.85
breast tumor	1.59
breast tumor	2.18
breast tumor	1.30
brain stage 5 ALZ	1.81
brain stage 5 ALZ	4.33
brain stage 5 ALZ	3.51
brain stage 5 ALZ	2.55
lung 24	-7.81
lung 28	-21.71
lung 23	-4.65
asthmatic lung	1.07

asthmatic lung	5.84
asthmatic lung	6.27
asthmatic lung	7.01
endo VEGF	0.00
endo bFGF	7.54
heart T-1	2.72
heart T-14	40.02
heart T-3399	25.40
BM stim	-2.69
osteo dif	0.00
Cartilage (pool)	-98.14
PBL HIV IIIB	-5.48
MRC5 HSV strain F	52.53

Gene Name sbg99174LOX-like

5 Moderate overall expression in normal and disease samples. Highest normal expression in whole brain, liver, skin, spleen, testis. Shows relatively good expression in the female reproductive samples as well as the GI tract samples. Highest disease expression in one of the normal lung samples, one of the asthmatic lung samples, neutrophils, eosinophils, 2 of the RA synovium samples, and one of the OA bone samples. Downregulation in 1 of 4 lung tumor samples suggests possible implication in lung cancer. Upregulation in 2 of 4 breast tumors implies an involvement in cancers of the breast. Downregulation in 1 of 4 AD brains along with the high expression seen in the brain suggests an involvement in Alzheimer's disease. Downregulation in 2 of 3 COPD lung samples implies an involvement in chronic obstructive pulmonary disease. Upregulation in 1 of 4 asthmatic lung samples implies a role in asthma. Downregulation in OA cartilage and high expression in OA and RA synovium suggests possible involvement in osteoarthritis and rheumatoid arthritis. Corroborating high expression in the T cells provides additional evidence for a role in RA/OA. Moderate expression in other immune cells.

10

15

Sample sbg99174LOX-like	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	39.67, 34.48	0.53	11.91	6.22	3.06	16.34	101.63
Subcutaneous Adipose Zenbio	40, 39.75	0.39	0.51	0.45	0.96	52.36	23.56
Adrenal Gland Clontech	38.61, 37.69	1	1.75	1.38	0.61	81.97	112.70
Whole Brain Clontech	30.59, 31.07	122.95	92.57	107.76	7.24	6.91	744.20
Fetal Brain Clontech	40, 40	0	0.29	0.15	0.48	103.95	15.07
Cerebellum Clontech	40, 40	0.4	0.4	0.40	2.17	23.04	9.22
Cervix	35.77, 40	5.52	0.62	3.07	2.42	20.66	63.43
Colon	40, 39.41	0.34	0.62	0.48	2.71	18.45	8.86
Endometrium	40, 38.65	0	0.98	0.49	0.73	68.21	33.42
Esophagus	40, 40	0.35	0.41	0.38	1.37	36.50	13.87
Heart Clontech	39.33, 40	0.65	0	0.33	1.32	37.88	12.31
Hypothalamus	40, 39.54	0	0.58	0.29	0.32	155.28	45.03
Ileum	35.42, 35.76	6.79	5.55	6.17	2.58	19.38	119.57
Jejunum	34.13, 33.4	14.77	22.9	18.84	6.60	7.58	142.69

Kidney	40, 37.22	0.68	2.32	1.50	2.12	23.58	35.38
Liver	33.5, 33.86	21.47	17.3	19.39	1.50	33.33	646.17
Fetal Liver Clontech	32.78, 33.23	33.08	25.33	29.21	10.40	4.81	140.41
Lung	33.96, 34.44	16.33	12.25	14.29	2.57	19.46	278.02
Mammary Gland Clontech	35.05, 36.02	8.51	4.76	6.64	13.00	3.85	25.52
Myometrium	35.08, 35.49	8.34	6.52	7.43	2.34	21.37	158.76
Omentum	37.6, 35.05	1.83	8.49	5.16	3.94	12.69	65.48
Ovary	35.57, 32.76	6.21	33.46	19.84	4.34	11.52	228.51
Pancreas	40, 40	0	0.42	0.21	0.81	61.80	12.98
Head of Pancreas	40, 38.65	0.56	0.98	0.77	1.57	31.85	24.52
Parotid Gland	35.28, 40	7.4	0.64	4.02	5.48	9.12	36.68
Placenta Clontech	40, 39.17	0.32	0.72	0.52	5.26	9.51	4.94
Prostate	40, 35.34	0	7.15	3.58	3.00	16.67	59.58
Rectum	37.29, 39.02	2.22	0.78	1.50	1.23	40.65	60.98
Salivary Gland Clontech	40, 38.15	0.27	1.32	0.80	7.31	6.84	5.44
Skeletal Muscle Clontech	40, 38.56	0.56	1.03	0.80	1.26	39.68	31.55
Skin	35.1, 34.19	8.22	14.22	11.22	1.21	41.32	463.64
Small Intestine Clontech	40, 40	0	0.85	0.43	0.98	51.07	21.71
Spleen	32.2, 32.08	46.76	50.49	48.63	4.92	10.16	494.16
Stomach	34.28, 34.07	13.5	15.3	14.40	2.73	18.32	263.74
Testis Clontech	34.05, 32.7	15.46	34.82	25.14	0.57	87.87	2209.14
Thymus Clontech	33.85, 32.4	17.44	41.71	29.58	9.89	5.06	149.52
Thyroid	34.22, 34.29	13.93	13.37	13.65	2.77	18.05	246.39
Trachea Clontech	32.51, 32.4	38.89	41.53	40.21	9.71	5.15	207.05
Urinary Bladder	35.47, 40	6.6	0	3.30	5.47	9.14	30.16
Uterus	33.8, 33.6	18.01	20.22	19.12	5.34	9.36	178.98
genomic	26.31	1603.29					
b-actin	27.35	860.96					
1.00E+05	19.71	100000					
1.00E+05	19.88	100000					
1.00E+04	22.98	10000					
1.00E+04	23.01	10000					
1.00E+03	26.44	1000					
1.00E+03	26.54	1000					
1.00E+02	31.28	100					
1.00E+02	31.29	100					
1.00E+01	35.79	10					
1.00E+01	34.36	10					
1.00E-00	38.32	1					
1.00E-00	40	1					
NTC	40	0					
NTC	40	0					

Sample sbg99174LOX-like	Reg number	Ct	Mean GOI	copies of	Sample	Fold Change
----------------------------	---------------	----	-------------	--------------	--------	----------------

	(GSK identifier)		copies	mRNA detecte d/50 ng total RNA		in Disease Populati on
colon normal GW98-167	21941	29.81	184.31	368.62	colon normal	
colon tumor GW98-166	21940	29.25	254.48	508.96	colon tumor	1.38
colon normal GW98-178	22080	32.06	50.31	100.62	colon normal	
colon tumor GW98-177	22060	31.77	59.28	118.56	colon tumor	1.18
colon normal GW98-561	23514	33.21	25.83	51.66	colon normal	
colon tumor GW98-560	23513	31.74	60.51	121.02	colon tumor	2.34
colon normal GW98-894	24691	30.17	149.84	299.68	colon normal	
colon tumor GW98-893	24690	29.41	232.23	464.46	colon tumor	1.55
lung normal GW98-3	20742	25.76	1914.72	3829.44	lung normal	
lung tumor GW98-2	20741	30.12	154.63	309.26	lung tumor	-12.38
lung normal GW97-179	20677	29.59	209.5	419.00	lung normal	
lung tumor GW97-178	20676	27.2	835.04	1670.08	lung tumor	3.99
lung normal GW98-165	21922	28.22	462.22	924.44	lung normal	
lung tumor GW98-164	21921	29.27	251.87	503.74	lung tumor	-1.84
lung normal GW98-282	22584	30.18	149.17	298.34	lung normal	
lung tumor GW98-281	22583	28.47	399.41	798.82	lung tumor	2.68
breast normal GW00-392	28750	30.24	143.58	143.58	breast normal	
breast tumor GW00-391	28746	30.16	151.08	302.16	breast tumor	2.10
breast normal GW00-413	28798	31.51	68.87	68.87	breast normal	
breast tumor GW00-412	28797	28.91	310.66	621.32	breast tumor	9.02
breast normal GW00-235:238	27592-95	40	0	0.00	breast normal	
breast tumor GW00-231:234	27588-91	33.55	21.28	21.28	breast tumor	21.28
breast normal GW98-621	23656	31.57	66.56	133.12	breast normal	
breast tumor GW98-620	23655	31.15	84.8	169.60	breast tumor	1.27
brain normal BB99-542	25507	29.55	214.38	428.76	brain normal	
brain normal BB99-406	25509	29.15	270.89	541.78	brain normal	
brain normal BB99-904	25546	30.48	124.98	249.96	brain normal	
brain stage 5 ALZ BB99-874	25502	33.57	20.99	41.98	brain stage 5 ALZ	-9.69
brain stage 5 ALZ BB99-887	25503	29.89	176.42	352.84	brain stage 5 ALZ	-1.15
brain stage 5 ALZ BB99-862	25504	31.65	63.83	127.66	brain stage 5 ALZ	-3.19
brain stage 5 ALZ BB99-927	25542	31.04	90.73	181.46	brain stage 5 ALZ	-2.24
CT lung KC	normal	29.94	170.8	341.60	CT lung	
lung 26 KC	normal	30.63	115.04	115.04	lung 26	
lung 27 KC	normal	32.22	45.83	45.83	lung 27	
lung 24 KC	COPD	34.16	14.91	14.91	lung 24	-9.21
lung 28 KC	COPD	33.51	21.7	21.70	lung 28	-6.33
lung 23 KC	COPD	32.51	38.67	38.67	lung 23	-3.55
lung 25 KC	normal	32.18	46.79	46.79	lung 25	
asthmatic lung ODO3112	29321	31.84	56.95	56.95	asthmatic lung	-2.41

asthmatic lung ODO3433	29323	31.12	86.42	172.84	asthmatic lung	1.26
asthmatic lung ODO3397	29322	27.13	867.31	1734.62	asthmatic lung	12.63
asthmatic lung ODO4928	29325	30.25	142.92	285.84	asthmatic lung	2.08
endo cells KC	control	31.23	81.05	81.05	endo cells	
endo VEGF KC		31.87	56.15	56.15	endo VEGF	-1.44
endo bFGF KC		32.64	35.97	35.97	endo bFGF	-2.25
heart Clontech	normal	35.46	7.06	14.12	heart	
heart (T-1) ischemic	29417	35.73	6.03	12.06	heart T-1	-1.17
heart (T-14) non-obstructive DCM	29422	34.34	13.49	26.98	heart T-14	1.91
heart (T-3399) DCM	29426	33.65	20.01	40.02	heart T-3399	2.83
adenoid GW99-269	26162	31.2	82.69	165.38	adenoid	
tonsil GW98-280	22582	30.8	103.96	207.92	tonsil	
T cells PC00314	28453	28.16	480.4	960.80	T cells	
PBMNC		30.25	143.11	143.11	PBMNC	
monocyte		30.05	160.68	321.36	monocyte	
B cells PC00665	28455	30.75	107.02	214.04	B cells	
dendritic cells 28441		30.32	137.17	274.34	dendritic cells	
neutrophils	28440	26.32	1390.87	1390.87	neutrophils	
eosinophils	28446	25.07	2854.44	5708.88	eosinophils	
BM unstim		30.72	109.05	109.05	BM unstim	
BM stim		28.61	369.2	369.20	BM stim	3.39
osteo dif		40	0	0.00	osteo dif	-0.28
osteo undif		40	0.28	0.28	osteo undif	
chondrocytes		34.3	13.76	34.40	chondrocytes	
OA Synovium IP12/01	29462	27.56	676.63	676.63	OA Synovium	
OA Synovium NP10/01	29461	31.41	73.19	146.38	OA Synovium	
OA Synovium NP57/00	28464	28.02	518.05	1036.10	OA Synovium	
RA Synovium NP03/01	28466	27.03	921.88	1843.76	RA Synovium	
RA Synovium NP71/00	28467	27.04	914.02	1828.04	RA Synovium	
RA Synovium NP45/00	28475	29.06	285.08	570.16	RA Synovium	
OA bone (biobank)	29217	26.78	1065.84	1065.84	OA bone (biobank)	
OA bone Sample 1	J. Emory	30.27	141.07	282.14	OA bone	
OA bone Sample 2	J. Emory	27.04	917.04	1834.08	OA bone	
Cartilage (pool)	Normal	28.23	461.21	922.42	Cartilage (pool)	
Cartilage (pool)	OA	33.16	26.65	53.30	Cartilage (pool)	-17.31
PBL uninfected	28441	28.72	346.97	693.94	PBL uninfected	
PBL HIV IIIB	28442	28.54	384.02	768.04	PBL HIV IIIB	1.11
MRC5 uninfected (100%)	29158	31.64	64.07	128.14	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	31.53	68.31	136.62	MRC5 HSV strain F	1.07
W12 cells	29179	34.44	12.72	25.44	W12 cells	
Keratinocytes	29180	36.02	5.1	10.20	Keratinocytes	
B-actin control		27.2	835.98			
genomic		26.76	1073.72			
1.00E+05		19.13	100000			
1.00E+05		19.61	100000			

1.00E+04		22.79	10000			
1.00E+04		22.5	10000			
1.00E+03		26.36	1000			
1.00E+03		26.23	1000			
1.00E+02		31.25	100			
1.00E+02		30.82	100			
1.00E+01		35.02	10			
1.00E+01		35.15	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg99174LOX-like

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.38
colon tumor	1.18
colon tumor	2.34
colon tumor	1.55
lung tumor	-12.38
lung tumor	3.99
lung tumor	-1.84
lung tumor	2.68
breast tumor	2.10
breast tumor	9.02
breast tumor	21.28
breast tumor	1.27
brain stage 5 ALZ	-9.69
brain stage 5 ALZ	-1.15
brain stage 5 ALZ	-3.19
brain stage 5 ALZ	-2.24
lung 24	-9.21
lung 28	-6.33
lung 23	-3.55
asthmatic lung	-2.41
asthmatic lung	1.26
asthmatic lung	12.63
asthmatic lung	2.08
endo VEGF	-1.44
endo bFGF	-2.25
heart T-1	-1.17
heart T-14	1.91
heart T-3399	2.83
BM stim	3.39
osteo dif	-0.28
Cartilage (pool)	-17.31
PBL HIV IIIB	1.11
MRC5 HSV strain F	1.07

5 Gene Name sbg995002PIGR (Taqman)

5

Extremely low overall expression in normal and disease samples. Highest normal expression in the colon and the parotid gland. Highest disease expression in the one of the lung tumors and one of the colon tumors. Upregulation in 1 of 4 colon tumors and 1 of 4 lung tumors imply roles in cancers of the colon and lung. Downregulation in 3 of 4 AD brain samples as well as high expression in whole brain suggests an involvement in Alzheimer's disease. Downregulation in 3 of 3 COPD lung samples implicates this gene in COPD. Downregulation in the ischemic and non-obstructive DCM heart samples suggests a role for this gene in cardiovascular disease. Upregulation in the stimulated bone marrow sample. Upregulation in HSV implicates involvement in herpes simplex virus as a potential host factor. High expression in neutrophils and eosinophils.

10

Sample sbg995002PIGR	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0	0	0.00	3.06	16.34	0.00
Subcutaneous Adipose Zenbio	40, 40	0	0	0.00	0.96	52.36	0.00
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	36.78, 40	11.16	0	5.58	7.24	6.91	38.54
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	40, 40	0	0	0.00	2.17	23.04	0.00
Cervix	40, 40	0	0	0.00	2.42	20.66	0.00
Colon	37.16, 37.12	8.81	9.05	8.93	2.71	18.45	164.76
Endometrium	40, 40	0	0	0.00	0.73	68.21	0.00
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	40, 40	0	0	0.00	2.58	19.38	0.00
Jejunum	40, 40	0	0	0.00	6.60	7.58	0.00
Kidney	40, 40	0	0	0.00	2.12	23.58	0.00
Liver	40, 39.16	0	2.58	1.29	1.50	33.33	43.00
Fetal Liver Clontech	40, 40	0	0	0.00	10.40	4.81	0.00
Lung	40, 40	0	0	0.00	2.57	19.46	0.00
Mammary Gland Clontech	40, 39.18	0	2.55	1.28	13.00	3.85	4.90
Myometrium	40, 40	0	0	0.00	2.34	21.37	0.00
Omentum	40, 38.04	0	5.15	2.58	3.94	12.69	32.68
Ovary	39.29, 40	2.37	0	1.19	4.34	11.52	13.65
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	36.7, 37.94	11.72	5.46	8.59	5.48	9.12	78.38
Placenta Clontech	40, 40	0	0	0.00	5.26	9.51	0.00
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 40	0	0	0.00	1.23	40.65	0.00
Salivary Gland Clontech	37.23, 39.21	8.45	2.5	5.48	7.31	6.84	37.45
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00

Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	40, 38.76	1.25	3.3	2.28	4.92	10.16	23.12
Stomach	40, 39.25	1.25	2.43	1.84	2.73	18.32	33.70
Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00
Thymus Clontech	37.82, 40	5.88	0	2.94	9.89	5.06	14.86
Thyroid	40, 40	0	0	0.00	2.77	18.05	0.00
Trachea Clontech	40, 40	0	0	0.00	9.71	5.15	0.00
Urinary Bladder	40, 40	0	0	0.00	5.47	9.14	0.00
Uterus	38.34, 40	4.27	0	2.14	5.34	9.36	19.99
genomic	29.66	888.99					
b-actin	30.72	462.87					
1.00E+05	22.2	100000					
1.00E+05	22.14	100000					
1.00E+04	25.72	10000					
1.00E+04	25.66	10000					
1.00E+03	29.16	1000					
1.00E+03	29.07	1000					
1.00E+02	32.37	100					
1.00E+02	34.12	100					
1.00E+01	37.12	10					
1.00E+01	37.11	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	38.03	-1					

Sample sbg995002PIGR	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	33.43	149.84	299.68	colon normal	
colon tumor GW98-166	21940	32.49	274.64	549.28	colon tumor	1.83
colon normal GW98-178	22080	40	0	0.00	colon normal	
colon tumor GW98-177	22060	31.11	675.8	1351.60	colon tumor	1351.60
colon normal GW98-561	23514	37.74	9.09	18.18	colon normal	
colon tumor GW98-560	23513	35.81	31.94	63.88	colon tumor	3.51
colon normal GW98-894	24691	33.17	177.11	354.22	colon normal	
colon tumor GW98-893	24690	31.61	488.49	976.98	colon tumor	2.76
lung normal GW98-3	20742	35.48	39.55	79.10	lung normal	
lung tumor GW98-2	20741	28.32	4121.56	8243.12	lung tumor	104.21
lung normal GW97-179	20677	36.47	20.69	41.38	lung normal	
lung tumor GW97-178	20676	37.24	12.59	25.18	lung tumor	-1.64
lung normal GW98-165	21922	37.32	11.96	23.92	lung normal	
lung tumor GW98-164	21921	36.07	26.9	53.80	lung tumor	2.25

lung normal GW98-282	22584	38.49	5.58	11.16	lung normal	
lung tumor GW98-281	22583	37.89	8.24	16.48	lung tumor	1.48
breast normal GW00-392	28750	39.03	3.93	3.93	breast normal	
breast tumor GW00-391	28746	38.01	7.65	15.30	breast tumor	3.89
breast normal GW00-413	28798	40	0	0.00	breast normal	
breast tumor GW00-412	28797	38.67	4.98	9.96	breast tumor	9.96
breast normal GW00-235:238	27592-95	40	0	0.00	breast normal	
breast tumor GW00-231:234	27588-91	40	0	0.00	breast tumor	0.00
breast normal GW98-621	23656	36.12	26.13	52.26	breast normal	
breast tumor GW98-620	23655	40	0	0.00	breast tumor	-52.26
brain normal BB99-542	25507	37.14	13.43	26.86	brain normal	
brain normal BB99-406	25509	40	0	0.00	brain normal	
brain normal BB99-904	25546	40	0	0.00	brain normal	
brain stage 5 ALZ BB99-874	25502	40	0	0.00	brain stage 5 ALZ	-8.95
brain stage 5 ALZ BB99-887	25503	40	0.51	1.02	brain stage 5 ALZ	-8.78
brain stage 5 ALZ BB99-862	25504	40	0.88	1.76	brain stage 5 ALZ	-5.09
brain stage 5 ALZ BB99-927	25542	40	1.9	3.80	brain stage 5 ALZ	-2.36
CT lung KC	normal	36.59	19.23	38.46	CT lung	
lung 26 KC	normal	40	0	0.00	lung 26	
lung 27 KC	normal	40	0	0.00	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-9.62
lung 28 KC	COPD	40	0	0.00	lung 28	-9.62
lung 23 KC	COPD	40	0	0.00	lung 23	-9.62
lung 25 KC	normal	40	0	0.00	lung 25	
asthmatic lung ODO3112	29321	40	0	0.00	asthmatic lung	-9.62
asthmatic lung ODO3433	29323	38.36	6.1	12.20	asthmatic lung	1.27
asthmatic lung ODO3397	29322	37.29	12.16	24.32	asthmatic lung	2.53
asthmatic lung ODO4928	29325	38.01	7.64	15.28	asthmatic lung	1.59
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		40	0	0.00	endo bFGF	0.00
heart Clontech	normal	37.85	8.49	16.98	heart	
heart (T-1) ischemic	29417	40	0	0.00	heart T-1	-16.98
heart (T-14) non-obstructive DCM	29422	40	0	0.00	heart T-14	-16.98
heart (T-3399) DCM	29426	39.5	2.9	5.80	heart T-3399	-2.93
adenoid GW99-269	26162	40	0	0.00	adenoid	
tonsil GW98-280	22582	36.35	22.46	44.92	tonsil	
T cells PC00314	28453	36.17	25.23	50.46	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0.45	0.90	monocyte	
B cells PC00665	28455	40	0.6	1.20	B cells	
dendritic cells 28441		38.07	7.37	14.74	dendritic cells	
neutrophils	28440	32.73	236.09	236.09	neutrophils	

eosinophils	28446	33.68	126.65	253.30	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim		36.52	20.1	20.10	BM stim	20.10
osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		39.61	2.7	6.75	chondrocytes	
OA Synovium IP12/01	29462	39.91	1.59	1.59	OA Synovium	
OA Synovium NP10/01	29461	38.98	4.07	8.14	OA Synovium	
OA Synovium NP57/00	28464	36.29	23.27	46.54	OA Synovium	
RA Synovium NP03/01	28466	35.81	31.94	63.88	RA Synovium	
RA Synovium NP71/00	28467	34.79	61.79	123.58	RA Synovium	
RA Synovium NP45/00	28475	35.08	51.15	102.30	RA Synovium	
OA bone (biobank)	29217	40	1.12	1.12	OA bone (biobank)	
OA bone Sample 1	J. Emory	36.8	16.77	33.54	OA bone	
OA bone Sample 2	J. Emory	34.72	64.74	129.48	OA bone	
Cartilage (pool)	Normal	37.46	10.93	21.86	Cartilage (pool)	
Cartilage (pool)	OA	40	0	0.00	Cartilage (pool)	-21.86
PBL uninfected	28441	35.05	52.27	104.54	PBL uninfected	
PBL HIV IIIB	28442	37.31	12.04	24.08	PBL HIV IIIB	-4.34
MRC5 uninfected (100%)	29158	40	0	0.00	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	38.19	6.8	13.60	MRC5 HSV strain F	13.60
W12 cells	29179	40	0	0.00	W12 cells	
Keratinocytes	29180	40	0	0.00	Keratinocytes	
B-actin control	B-actin control	29.77	1604.25			
genomic	genomic	30.5	1001.61			
1.00E+05	1.00E+05	22.95	100000			
1.00E+05	1.00E+05	22.91	100000			
1.00E+04	1.00E+04	26.49	10000			
1.00E+04	1.00E+04	26.66	10000			
1.00E+03	1.00E+03	30.62	1000			
1.00E+03	1.00E+03	30.43	1000			
1.00E+02	1.00E+02	36.12	100			
1.00E+02	1.00E+02	34.73	100			
1.00E+01	1.00E+01	38.58	10			
1.00E+01	1.00E+01	38.82	10			
1.00E-00	1.00E-00	40	0			
1.00E-00	1.00E-00	37.86	1			
NTC	NTC	40	0			

Gene Name sbg995002PIGR

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.83

colon tumor	1351.60
colon tumor	3.51
colon tumor	2.76
lung tumor	104.21
lung tumor	-1.64
lung tumor	2.25
lung tumor	1.48
breast tumor	3.89
breast tumor	9.96
breast tumor	0.00
breast tumor	-52.26
brain stage 5 ALZ	-8.95
brain stage 5 ALZ	-8.78
brain stage 5 ALZ	-5.09
brain stage 5 ALZ	-2.36
lung 24	-9.62
lung 28	-9.62
lung 23	-9.62
asthmatic lung	-9.62
asthmatic lung	1.27
asthmatic lung	2.53
asthmatic lung	1.59
endo VEGF	0.00
endo bFGF	0.00
heart T-1	-16.98
heart T-14	-16.98
heart T-3399	-2.93
BM stim	20.10
osteo dif	0.00
Cartilage (pool)	-21.86
PBL HIV IIIB	-4.34
MRC5 HSV strain F	13.60

Gene Name sbg1033026C1q

- 5 Low to moderate overall expression in normal and disease samples. Highest normal expression in the subcutaneous adipocytes, subcutaneous adipose, whole brain, and heart. Highest disease expression in the 3 heart samples. Downregulation in 1 of 4 lung tumor samples and upregulation in 2 of 4 breast tumor samples indicates a role for this gene in cancers of the lung and breast. Upregulation in 2 of 4 AD brain samples suggests an involvement in Alzheimer's disease.
- 10 Upregulation in 3 of 3 heart samples implies an involvement in cardiovascular diseases such as non-obstructive and obstructive DCM as well as ischemia. Low expression in all of the immune cells. Low to moderate expression in the OA synovium and bone samples as well as in the RA synovium samples.

Sample sbg1033026C1q	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	32.32, 31.18	11.99	24.91	18.45	3.06	16.34	301.47
Subcutaneous Adipose Zenbio	34.95, 33.78	2.2	4.69	3.45	0.96	52.36	180.37

Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	28.5, 28.04	140.11	187.98	164.05	7.24	6.91	1132.91
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	40, 40	0	0	0.00	2.17	23.04	0.00
Cervix	40, 40	0	0	0.00	2.42	20.66	0.00
Colon	34.82, 38.44	2.39	0.23	1.31	2.71	18.45	24.17
Endometrium	40, 35.09	0	2.01	1.01	0.73	68.21	68.55
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	32.53, 34.31	10.45	3.32	6.89	1.32	37.88	260.80
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	40, 34.55	0	2.85	1.43	2.58	19.38	27.62
Jejunum	33.04, 34.86	7.51	2.33	4.92	6.60	7.58	37.27
Kidney	40, 40	0	0	0.00	2.12	23.58	0.00
Liver	35.81, 33.92	1.26	4.28	2.77	1.50	33.33	92.33
Fetal Liver Clontech	32.05, 40	14.25	0	7.13	10.40	4.81	34.25
Lung	40, 33.51	0	5.58	2.79	2.57	19.46	54.28
Mammary Gland Clontech	31.05, 30.69	27.02	34.2	30.61	13.00	3.85	117.73
Myometrium	33.29, 35.1	6.42	2	4.21	2.34	21.37	89.96
Omentum	34.44, 40	3.07	0	1.54	3.94	12.69	19.48
Ovary	32.59, 35.04	10.03	2.07	6.05	4.34	11.52	69.70
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	34.63, 33.09	2.71	7.29	5.00	5.48	9.12	45.62
Placenta Clontech	32.77, 33.01	8.94	7.7	8.32	5.26	9.51	79.09
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 34.44	0	3.06	1.53	1.23	40.65	62.20
Salivary Gland Clontech	32.96, 40	7.94	0	3.97	7.31	6.84	27.15
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	40, 33.46	0.6	5.75	3.18	1.21	41.32	131.20
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	35.65, 35	1.4	2.13	1.77	4.92	10.16	17.94
Stomach	40, 34.73	0	2.54	1.27	2.73	18.32	23.26
Testis Clontech	40, 35.12	0	1.98	0.99	0.57	87.87	86.99
Thymus Clontech	32.44, 31.57	11.11	19.37	15.24	9.89	5.06	77.05
Thyroid	40, 40	0	0	0.00	2.77	18.05	0.00
Trachea Clontech	34.58, 33.56	2.79	5.4	4.10	9.71	5.15	21.09
Urinary Bladder	33.45, 33.34	5.8	6.21	6.01	5.47	9.14	54.89
Uterus	33.19, 32.41	6.82	11.32	9.07	5.34	9.36	84.93
genomic	25.47	981.57					
b-actin	26.87	398.61					
1.00E+05	18.24	100000					
1.00E+05	18.35	100000					
1.00E+04	21.53	10000					
1.00E+04	21.62	10000					

1.00E+03	25.17	1000					
1.00E+03	25.03	1000					
1.00E+02	30.53	100					
1.00E+02	30.49	100					
1.00E+01	30.85	10					
1.00E+01	40	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg1033026C1q	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populat ion
colon normal GW98-167	21941	27.03	397.15	794.30	colon normal	
colon tumor GW98-166	21940	29.53	91.39	182.78	colon tumor	-4.35
colon normal GW98-178	22080	30.3	57.81	115.62	colon normal	
colon tumor GW98-177	22060	29.31	103.84	207.68	colon tumor	1.80
colon normal GW98-561	23514	28.79	140.64	281.28	colon normal	
colon tumor GW98-560	23513	30.18	62.18	124.36	colon tumor	-2.26
colon normal GW98-894	24691	28.31	187.28	374.56	colon normal	
colon tumor GW98-893	24690	28.75	143.93	287.86	colon tumor	-1.30
lung normal GW98-3	20742	28.18	201.78	403.56	lung normal	
lung tumor GW98-2	20741	32.35	17.41	34.82	lung tumor	-11.59
lung normal GW97-179	20677	29.94	71.52	143.04	lung normal	
lung tumor GW97-178	20676	28.76	143.36	286.72	lung tumor	2.00
lung normal GW98-165	21922	28.69	149.49	298.98	lung normal	
lung tumor GW98-164	21921	31.28	32.63	65.26	lung tumor	-4.58
lung normal GW98-282	22584	31.42	30.07	60.14	lung normal	
lung tumor GW98-281	22583	30.33	56.83	113.66	lung tumor	1.89
breast normal GW00-392	28750	28.72	146.7	146.70	breast normal	
breast tumor GW00-391	28746	27.02	398.56	797.12	breast tumor	5.43
breast normal GW00-413	28798	30.95	39.63	39.63	breast normal	
breast tumor GW00-412	28797	30.58	49.03	98.06	breast tumor	2.47
breast normal GW00-235:238	27592-95	32.53	15.6	15.60	breast normal	
breast tumor GW00-231:234	27588-91	29.58	88.49	88.49	breast tumor	5.67
breast normal GW98-621	23656	27.5	300.39	600.78	breast normal	
breast tumor GW98-620	23655	29.28	105.43	210.86	breast tumor	-2.85
brain normal BB99-542	25507	30.67	46.59	93.18	brain normal	
brain normal BB99-406	25509	29.54	90.66	181.32	brain normal	
brain normal BB99-904	25546	31.13	35.58	71.16	brain normal	
brain stage 5 ALZ BB99-874	25502	31.4	30.36	60.72	brain stage 5 ALZ	-1.90

brain stage 5 ALZ BB99-887	25503	28.39	177.94	355.88	brain stage 5 ALZ	3.09
brain stage 5 ALZ BB99-862	25504	28.92	130.19	260.38	brain stage 5 ALZ	2.26
brain stage 5 ALZ BB99-927	25542	28.2	198.98	397.96	brain stage 5 ALZ	3.45
CT lung KC	normal	31.24	33.37	66.74	CT lung	
lung 26 KC	normal	33.59	8.37	8.37	lung 26	
lung 27 KC	normal	37.8	0.7	0.70	lung 27	
lung 24 KC	COPD	34.56	4.73	4.73	lung 24	-4.39
lung 28 KC	COPD	35.39	2.91	2.91	lung 28	-7.13
lung 23 KC	COPD	34.74	4.26	4.26	lung 23	-4.87
lung 25 KC	normal	33.85	7.19	7.19	lung 25	
asthmatic lung ODO3112	29321	35.04	3.57	3.57	asthmatic lung	-5.81
asthmatic lung ODO3433	29323	32.44	16.48	32.96	asthmatic lung	1.59
asthmatic lung ODO3397	29322	29.4	98.44	196.88	asthmatic lung	9.49
asthmatic lung ODO4928	29325	31.1	36.23	72.46	asthmatic lung	3.49
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		35.4	2.89	2.89	endo bFGF	2.89
heart Clontech	normal	29.05	120.78	241.56	heart	
heart (T-1) ischemic	29417	26.23	633.79	1267.58	heart T-1	5.25
heart (T-14) non-obstructive DCM	29422	25.74	847.85	1695.70	heart T-14	7.02
heart (T-3399) DCM	29426	25.03	1289.37	2578.74	heart T-3399	10.68
adenoid GW99-269	26162	35.24	3.17	6.34	adenoid	
tonsil GW98-280	22582	31	38.35	76.70	tonsil	
T cells PC00314	28453	31.75	24.69	49.38	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	31.35	31.31	62.62	B cells	
dendritic cells 28441		32.81	13.25	26.50	dendritic cells	
neutrophils	28440	31.76	24.51	24.51	neutrophils	
eosinophils	28446	33.08	11.29	22.58	eosinophils	
BM unstim		36.9	1.19	1.19	BM unstim	
BM stim		38.86	0.38	0.38	BM stim	-3.13
osteo dif		37.77	0.72	0.72	osteo dif	0.72
osteo undif		40	0	0.00	osteo undif	
chondrocytes		33.14	10.88	27.20	chondrocytes	
OA Synovium IP12/01	29462	30.61	48.28	48.28	OA Synovium	
OA Synovium NP10/01	29461	27.5	300.97	601.94	OA Synovium	
OA Synovium NP57/00	28464	29.28	105.55	211.10	OA Synovium	
RA Synovium NP03/01	28466	30.18	62.3	124.60	RA Synovium	
RA Synovium NP71/00	28467	29.22	109.5	219.00	RA Synovium	
RA Synovium NP45/00	28475	30.06	66.71	133.42	RA Synovium	
OA bone (biobank)	29217	32.6	14.99	14.99	OA bone (biobank)	
OA bone Sample 1	J. Emory	30.48	52.25	104.50	OA bone	
OA bone Sample 2	J. Emory	32.31	17.76	35.52	OA bone	
Cartilage (pool)	Normal	30.45	53.05	106.10	Cartilage (pool)	

Cartilage (pool)	OA	30.81	43.01	86.02	Cartilage (pool)	-1.23
PBL uninfected	28441	30.19	61.92	123.84	PBL uninfected	
PBL HIV IIIB	28442	31.19	34.35	68.70	PBL HIV IIIB	-1.80
MRC5 uninfected (100%)	29158	30.19	62.02	124.04	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	31.13	35.48	70.96	MRC5 HSV strain F	-1.75
W12 cells	29179	32	21.32	42.64	W12 cells	
Keratinocytes	29180	33.3	9.92	19.84	Keratinocytes	
B-actin control		26.66	492.23			
genomic		24.83	1443.91			
1.00E+05		18.12	100000			
1.00E+05		18.12	100000			
1.00E+04		21.28	10000			
1.00E+04		21.31	10000			
1.00E+03		24.92	1000			
1.00E+03		24.9	1000			
1.00E+02		29.22	100			
1.00E+02		29.26	100			
1.00E+01		33.13	10			
1.00E+01		34.32	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg1033026C1q

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-4.35
colon tumor	1.80
colon tumor	-2.26
colon tumor	-1.30
lung tumor	-11.59
lung tumor	2.00
lung tumor	-4.58
lung tumor	1.89
breast tumor	5.43
breast tumor	2.47
breast tumor	5.67
breast tumor	-2.85
brain stage 5 ALZ	-1.90
brain stage 5 ALZ	3.09
brain stage 5 ALZ	2.26
brain stage 5 ALZ	3.45
lung 24	-4.39
lung 28	-7.13
lung 23	-4.87
asthmatic lung	-5.81
asthmatic lung	1.59
asthmatic lung	9.49

asthmatic lung	3.49
endo VEGF	0.00
endo bFGF	2.89
heart T-1	5.25
heart T-14	7.02
heart T-3399	10.68
BM stim	-3.13
osteo dif	0.72
Cartilage (pool)	-1.23
PBL HIV IIIB	-1.80
MRC5 HSV strain F	-1.75

Gene Name sbg1003675Rnase

FAILED

5

Gene Name sbg1015258PLM

Low overall expression in normal and disease samples. Highest normal expression in the endometrium, hypothalamus, liver small intestine, and the testis. Highest disease expression in one of the breast normal/tumor pairs, one of the normal brain samples, two of the Alzheimer's disease brain samples, the B cells and the HSV-infected MRC5 cells. Downregulation in 1 of 4 lung tumor samples is sufficient to claim a role in cancer of the lung. Upregulation in 2 of 4 breast tumor samples indicates an involvement in cancer of the breast. Downregulation in 2 of 3 COPD samples and in 1 of 4 asthmatic lung samples implies a role in chronic obstructive pulmonary disease and asthma. Upregulation in the obstructive DCM heart sample suggests a potential role in cardiovascular disease. Downregulation in the stimulated bone marrow sample. Downregulation in the OA cartilage pool implicates this gene in osteoarthritis. Upregulation in the HSV-infected MRC5 cells suggests that this gene may be a host factor in HSV. Low expression in all immune cells except the B cells which show moderate expression.

Sample sbg1015258PLM	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected/ 50 ng total RNA
Subcutaneous Adipocytes Zenbio	39.96, 39.32	0.39	0.73	0.56	3.06	16.34	9.15
Subcutaneous Adipose Zenbio	39.61, 37.77	0.62	1.84	1.23	0.96	52.36	64.40
Adrenal Gland Clontech	36.89, 37.65	3.12	1.98	2.55	0.61	81.97	209.02
Whole Brain Clontech	32.77, 33.06	36.18	30.37	33.28	7.24	6.91	229.80
Fetal Brain Clontech	38.01, 37.52	1.6	2.14	1.87	0.48	103.95	194.39
Cerebellum Clontech	38.34, 37.8	1.31	1.81	1.56	2.17	23.04	35.94
Cervix	36.9, 37.17	3.1	2.64	2.87	2.42	20.66	59.30
Colon	35.93, 37.95	5.51	1.66	3.59	2.71	18.45	66.14
Endometrium	34.62, 37.51	12.02	2.15	7.09	0.73	68.21	483.29
Esophagus	35.76, 37.39	6.1	2.31	4.21	1.37	36.50	153.47
Heart Clontech	36.78, 38.53	3.33	1.17	2.25	1.32	37.88	85.23
Hypothalamus	37.12, 36.52	2.71	3.87	3.29	0.32	155.28	510.87
Ileum	36.15, 36.19	4.84	4.72	4.78	2.58	19.38	92.64
Jejunum	34.6, 33.48	12.14	23.65	17.90	6.60	7.58	135.57
Kidney	37.16, 37.9	2.65	1.7	2.18	2.12	23.58	51.30

Liver	34.6, 36.06	12.13	5.11	8.62	1.50	33.33	287.33
Fetal Liver Clontech	34.32, 36.91	14.35	3.07	8.71	10.40	4.81	41.88
Lung	36.94, 35.31	3.02	7.98	5.50	2.57	19.46	107.00
Mammary Gland Clontech	38.03, 36.89	1.58	3.11	2.35	13.00	3.85	9.02
Myometrium	38.44, 38	1.24	1.6	1.42	2.34	21.37	30.34
Omentum	35.41, 35.38	7.51	7.64	7.58	3.94	12.69	96.13
Omentum							
Ovary	34.32, 34.36	14.4	14.07	14.24	4.34	11.52	164.00
Pancreas	36.44, 36.82	4.07	3.25	3.66	0.81	61.80	226.21
Head of Pancreas	37.54, 36.96	2.11	2.98	2.55	1.57	31.85	81.05
Parotid Gland	37.1, 35.46	2.75	7.29	5.02	5.48	9.12	45.80
Placenta Clontech	36.07, 35.36	5.08	7.74	6.41	5.26	9.51	60.93
Prostate	37.4, 37.82	2.3	1.79	2.05	3.00	16.67	34.08
Rectum	36.65, 37.39	3.59	2.32	2.96	1.23	40.65	120.12
Salivary Gland Clontech	38.55, 39.31	1.16	0.74	0.95	7.31	6.84	6.50
Skeletal Muscle Clontech	37.59, 36.87	2.06	3.15	2.61	1.26	39.68	103.37
Skin	38.36, 36.33	1.3	4.34	2.82	1.21	41.32	116.53
Small Intestine Clontech	36.05, 36.76	5.14	3.37	4.26	0.98	51.07	217.31
Spleen	37.62, 35.34	2.02	7.83	4.93	4.92	10.16	50.05
Stomach	35.8, 35.15	5.95	8.76	7.36	2.73	18.32	134.71
Testis Clontech	35.14, 37.08	8.82	2.77	5.80	0.57	87.87	509.23
Thymus Clontech	35.89, 35.06	5.65	9.22	7.44	9.89	5.06	37.59
Thyroid	37.59, 37.2	2.06	2.59	2.33	2.77	18.05	41.97
Trachea Clontech	37.52, 37.95	2.14	1.66	1.90	9.71	5.15	9.78
Urinary Bladder	37.47, 35.44	2.2	7.38	4.79	5.47	9.14	43.78
Uterus	34.17, 34.12	15.66	16.17	15.92	5.34	9.36	149.02
genomic	27.03	1097.52					
b-actin	27.23	974.77					
1.00E+05	19.25	100000					
1.00E+05	19.2	100000					
1.00E+04	22.99	10000					
1.00E+04	22.94	10000					
1.00E+03	27.09	1000					
1.00E+03	27.28	1000					
1.00E+02	31.49	100					
1.00E+02	31.46	100					
1.00E+01	37.86	10					
1.00E+01	35.45	10					
1.00E-00	37.08	1					
1.00E-00	37.4	1					
NTC	36.45	-1					
NTC	36.15	-1					

Sample	Reg number	Ct	Mean GOI	copies of mRNA	Sample	Fold Change in
sbg1015258PLM						

	(GSK identifier)		copies	detected/ 50 ng total RNA		Disease Population
colon normal GW98-167	21941	35.4	9.91	19.82	colon normal	
colon tumor GW98-166	21940	35.13	11.61	23.22	colon tumor	1.17
colon normal GW98-178	22080	34.84	13.83	27.66	colon normal	
colon tumor GW98-177	22060	35	12.59	25.18	colon tumor	-1.10
colon normal GW98-561	23514	35.48	9.4	18.80	colon normal	
colon tumor GW98-560	23513	36.2	6.14	12.28	colon tumor	-1.53
colon normal GW98-894	24691	34.53	16.62	33.24	colon normal	
colon tumor GW98-893	24690	34.29	19.25	38.50	colon tumor	1.16
lung normal GW98-3	20742	34.53	16.69	33.38	lung normal	
lung tumor GW98-2	20741	37.87	2.25	4.50	lung tumor	-7.42
lung normal GW97-179	20677	34.59	16.02	32.04	lung normal	
lung tumor GW97-178	20676	34.45	17.43	34.86	lung tumor	1.09
lung normal GW98-165	21922	33.89	24.39	48.78	lung normal	
lung tumor GW98-164	21921	35.48	9.43	18.86	lung tumor	-2.59
lung normal GW98-282	22584	36.67	4.62	9.24	lung normal	
lung tumor GW98-281	22583	37.87	2.26	4.52	lung tumor	-2.04
breast normal GW00-392	28750	34.17	20.64	20.64	breast normal	
breast tumor GW00-391	28746	33.54	30.09	60.18	breast tumor	2.92
breast normal GW00-413	28798	39.05	1.11	1.11	breast normal	
breast tumor GW00-412	28797	35.01	12.46	24.92	breast tumor	22.45
breast normal GW00-235:238	27592-95	40	0.55	0.55	breast normal	
breast tumor GW00-231:234	27588-91	35.07	12.02	12.02	breast tumor	21.85
breast normal GW98-621	23656	33	41.58	83.16	breast normal	
breast tumor GW98-620	23655	33.05	40.47	80.94	breast tumor	-1.03
brain normal BB99-542	25507	32.73	48.93	97.86	brain normal	
brain normal BB99-406	25509	33.97	23.34	46.68	brain normal	
brain normal BB99-904	25546	37.88	2.24	4.48	brain normal	
brain stage 5 ALZ BB99-874	25502	35.92	7.25	14.50	brain stage 5 ALZ	-3.43
brain stage 5 ALZ BB99-887	25503	31.57	97.99	195.98	brain stage 5 ALZ	3.95
brain stage 5 ALZ BB99-862	25504	36.08	6.57	13.14	brain stage 5 ALZ	-3.78
brain stage 5 ALZ BB99-927	25542	32.66	50.98	101.96	brain stage 5 ALZ	2.05
CT lung KC	normal	37.37	3.04	6.08	CT lung	
lung 26 KC	normal				lung 26	
lung 27 KC	normal	38.52	1.52	1.52	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-3.07
lung 28 KC	COPD	37.4	2.99	2.99	lung 28	-1.03
lung 23 KC	COPD	39.56	0.82	0.82	lung 23	-3.74
lung 25 KC	normal	38.43	1.61	1.61	lung 25	

asthmatic lung ODO3112	29321	39.45	0.88	0.88	asthmatic lung	-3.49
asthmatic lung ODO3433	29323	36.48	5.19	10.38	asthmatic lung	3.38
asthmatic lung ODO3397	29322	35.56	8.99	17.98	asthmatic lung	5.86
asthmatic lung ODO4928	29325	37.06	3.66	7.32	asthmatic lung	2.38
endo cells KC	control	39.29	0.96	0.96	endo cells	
endo VEGF KC		37.65	2.57	2.57	endo VEGF	2.68
endo bFGF KC		40	0.48	0.48	endo bFGF	-2.00
heart Clontech	normal	40	0.68	1.36	heart	
heart (T-1) ischemic	29417	39.29	0.96	1.92	heart T-1	1.41
heart (T-14) non- obstructive DCM	29422	38.21	1.84	3.68	heart T-14	2.71
heart (T-3399) DCM	29426	35.49	9.35	18.70	heart T-3399	13.75
adenoid GW99-269	26162	39.63	0.78	1.56	adenoid	
tonsil GW98-280	22582	34.5	16.92	33.84	tonsil	
T cells PC00314	28453	34.57	16.25	32.50	T cells	
PBMNC		37.32	3.13	3.13	PBMNC	
monocyte		37.74	2.44	4.88	monocyte	
B cells PC00665	28455	33.32	34.36	68.72	B cells	
dendritic cells 28441		37.29	3.19	6.38	dendritic cells	
neutrophils	28440	36.01	6.85	6.85	neutrophils	
eosinophils	28446	35.38	9.98	19.96	eosinophils	
BM unstim		37.44	2.91	2.91	BM unstim	
BM stim		40	0.53	0.53	BM stim	-5.49
osteo dif		38.15	1.91	1.91	osteo dif	-1.38
osteo undif		37.6	2.64	2.64	osteo undif	
chondrocytes		36.1	6.51	16.28	chondrocytes	
OA Synovium IP12/01	29462	35.58	8.86	8.86	OA Synovium	
OA Synovium NP10/01	29461	35.46	9.54	19.08	OA Synovium	
OA Synovium NP57/00	28464	34.05	22.23	44.46	OA Synovium	
RA Synovium NP03/01	28466	37.92	2.19	4.38	RA Synovium	
RA Synovium NP71/00	28467	35.39	9.92	19.84	RA Synovium	
RA Synovium NP45/00	28475	35.03	12.37	24.74	RA Synovium	
OA bone (biobank)	29217	39.98	0.67	0.67	OA bone (biobank)	
OA bone Sample 1	J. Emory	36.06	6.68	13.36	OA bone	
OA bone Sample 2	J. Emory	39.89	0.67	1.34	OA bone	
Cartilage (pool)	Normal	35.57	8.92	17.84	Cartilage (pool)	
Cartilage (pool)	OA	39.5	0.85	1.70	Cartilage (pool)	-10.49
PBL uninfected	28441	36.65	4.67	9.34	PBL uninfected	
PBL HIV IIIB	28442	36.94	3.92	7.84	PBL HIV IIIB	-1.19
MRC5 uninfected (100%)	29158	37.54	2.74	5.48	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	33.19	37.18	74.36	MRC5 HSV strain F	13.57
W12 cells	29179	37.23	3.3	6.60	W12 cells	
Keratinocytes	29180	37.18	3.4	6.80	Keratinocytes	

B-actin control		27.26	1296.87			
genomic		27.2	1345.34			
1.00E+05		19.44	100000			
1.00E+05		19.81	100000			
1.00E+04		23.63	10000			
1.00E+04		23.41	10000			
1.00E+03		27.77	1000			
1.00E+03		27.89	1000			
1.00E+02		32.32	100			
1.00E+02		32.3	100			
1.00E+01		36.77	10			
1.00E+01		36.39	10			
1.00E-00		38.06	1			
1.00E-00		37.56	1			
NTC		38.18	-1			

Gene Name sbg1015258PLM

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.17
colon tumor	-1.10
colon tumor	-1.53
colon tumor	1.16
lung tumor	-7.42
lung tumor	1.09
lung tumor	-2.59
lung tumor	-2.04
breast tumor	2.92
breast tumor	22.45
breast tumor	21.85
breast tumor	-1.03
brain stage 5 ALZ	-3.43
brain stage 5 ALZ	3.95
brain stage 5 ALZ	-3.78
brain stage 5 ALZ	2.05
lung 24	-3.07
lung 28	-1.03
lung 23	-3.74
asthmatic lung	-3.49
asthmatic lung	3.38
asthmatic lung	5.86
asthmatic lung	2.38
endo VEGF	2.68
endo bFGF	-2.00

heart T-1	1.41
heart T-14	2.71
heart T-3399	13.75
BM stim	-5.49
osteo dif	-1.38
Cartilage (pool)	-10.49
PBL HIV IIIB	-1.19
MRC5 HSV strain F	13.57

Gene Name sbg1003328IG (Taqman)

5 Moderate overall expression. Highest normal expression in whole brain, fetal brain, and cerebellum with slightly lower levels of expression in the colon and mammary gland. Highest disease expression in the colon and lung tumor pairs as well as the normal and Alzheimer's brain. Significant upregulation in 2 of 4 breast tumor samples with slight upregulation in 1 of 4 breast tumor samples implicates this gene in breast cancer. Downregulation in 3 of 3 COPD samples may suggest an involvement in chronic obstructive pulmonary disease. Downregulation in 1 of 4 asthma samples suggests a potential role for this gene in asthma. Downregulation in the HSV-infected MRC5 cells suggests that this gene may play a role in HSV. High expression in 3 of 3 OA synovium samples, 3 of 3 RA synovium samples, 2 of 2 OA bone samples, and corroborating high expression in the T cells and B cells implicates this gene in osteoarthritis and rheumatoid arthritis.

Sample sbg1003328IG	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected /50 ng total RNA
Subcutaneous Adipocytes Zenbio	32.35, 32.1	109.15	127.12	118.14	3.06	16.34	1930.31
Subcutaneous Adipose Zenbio	37.92, 40	3.84	0	1.92	0.96	52.36	100.52
Adrenal Gland Clontech	38.07, 35.73	3.5	14.32	8.91	0.61	81.97	730.33
Whole Brain Clontech	22.72, 23.09	35640.5	28576.52	32108.51	7.24	6.91	221743.85
Fetal Brain Clontech	33.39, 34.06	58.43	39.04	48.74	0.48	103.95	5066.01
Cerebellum Clontech	31.32, 31.02	202.49	242.95	222.72	2.17	23.04	5131.80
Cervix	36.36, 35.6	9.78	15.49	12.64	2.42	20.66	261.05
Colon	30.74, 32.11	286.9	125.78	206.34	2.71	18.45	3807.01
Endometrium	34.58, 36.01	28.47	12.11	20.29	0.73	68.21	1384.04
Esophagus	37.54, 36.05	4.82	11.78	8.30	1.37	36.50	302.92
Heart Clontech	36.23, 36.85	10.56	7.3	8.93	1.32	37.88	338.26
Hypothalamus	40, 36.96	0	6.81	3.41	0.32	155.28	528.73
Ileum	34.79, 34.48	25.09	30.4	27.75	2.58	19.38	537.69
Jejunum	30.14, 31.02	412.72	242.47	327.60	6.60	7.58	2481.78
Kidney	33.94, 34.61	41.89	28.12	35.01	2.12	23.58	825.59
Liver	36.11, 35.38	11.41	17.61	14.51	1.50	33.33	483.67
Fetal Liver Clontech	30.24, 30.27	388.12	381.28	384.70	10.40	4.81	1849.52
Lung	35.59, 35.09	15.59	20.98	18.29	2.57	19.46	355.74
Mammary Gland Clontech	29.21, 28.52	718.74	1090.18	904.46	13.00	3.85	3478.69

Myometrium	33.7, 34.11	48.42	37.85	43.14	2.34	21.37	921.69
Omentum	33.83, 33.57	44.75	52.27	48.51	3.94	12.69	615.61
Ovary	32.47, 32.34	101.42	109.96	105.69	4.34	11.52	1217.63
Pancreas	38.16, 40	3.31	0	1.66	0.81	61.80	102.29
Head of Pancreas	40, 36.68	0	8.07	4.04	1.57	31.85	128.50
Parotid Gland	31.68, 31.03	162.92	241.11	202.02	5.48	9.12	1843.20
Placenta Clontech	30.48, 30.82	335.37	274.53	304.95	5.26	9.51	2898.76
Prostate	33.39, 32.15	58.39	122.82	90.61	3.00	16.67	1510.08
Rectum	35.95, 35.32	12.5	18.32	15.41	1.23	40.65	626.42
Salivary Gland Clontech	31.25, 30.65	211.88	303.2	257.54	7.31	6.84	1761.56
Skeletal Muscle Clontech	36.61, 37.62	8.44	4.6	6.52	1.26	39.68	258.73
Skin	36.37, 36.08	9.71	11.56	10.64	1.21	41.32	439.46
Small Intestine Clontech	36.74, 34.51	7.79	29.79	18.79	0.98	51.07	959.65
Spleen	34.78, 35.63	25.25	15.18	20.22	4.92	10.16	205.44
Stomach	40, 35.13	0.88	20.56	10.72	2.73	18.32	196.34
Testis Clontech	35.01, 39.68	22.07	1.33	11.70	0.57	87.87	1028.12
Thymus Clontech	29.15, 29.2	749.23	724.61	736.92	9.89	5.06	3725.58
Thyroid	32.02, 32.14	133.23	123.77	128.50	2.77	18.05	2319.49
Trachea Clontech	31.28, 30.17	207.67	405.04	306.36	9.71	5.15	1577.52
Urinary Bladder	33.07, 32.91	70.6	78.07	74.34	5.47	9.14	679.48
Uterus	33.01, 33.15	73.56	67.48	70.52	5.34	9.36	660.30
genomic	29.15	746.77					
b-actin	30.2	397.52					
1.00E+05	21.06	100000					
1.00E+05	20.94	100000					
1.00E+04	25.06	10000					
1.00E+04	24.54	10000					
1.00E+03	28.32	1000					
1.00E+03	28.77	1000					
1.00E+02	33	100					
1.00E+02	32.74	100					
1.00E+01	35.9	10					
1.00E+01	40	0					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg1003328IG	Reg number (GSK identifie r)	Ct	Mean GOI copies	copies of mRNA detected/ 50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	24.26	15509.01	31018.02	colon normal	

colon tumor GW98-166	21940	24.5	13727.44	27454.88	colon tumor	-1.13
colon normal GW98-178	22080	28.01	2276.97	4553.94	colon normal	
colon tumor GW98-177	22060	27.11	3618.2	7236.40	colon tumor	1.59
colon normal GW98-561	23514	24.47	13993.67	27987.34	colon normal	
colon tumor GW98-560	23513	25.32	9040.47	18080.94	colon tumor	-1.55
colon normal GW98-894	24691	24.17	16251.61	32503.22	colon normal	
colon tumor GW98-893	24690	25.15	9872.46	19744.92	colon tumor	-1.65
lung normal GW98-3	20742	24.4	14498.52	28997.04	lung normal	
lung tumor GW98-2	20741	24.66	12640.32	25280.64	lung tumor	-1.15
lung normal GW97-179	20677	24.12	16680.84	33361.68	lung normal	
lung tumor GW97-178	20676	24.69	12468.91	24937.82	lung tumor	-1.34
lung normal GW98-165	21922	25.09	10168.18	20336.36	lung normal	
lung tumor GW98-164	21921	25.49	8296.37	16592.74	lung tumor	-1.23
lung normal GW98-282	22584	26.85	4131.52	8263.04	lung normal	
lung tumor GW98-281	22583	26.59	4702	9404.00	lung tumor	1.14
breast normal GW00-392	28750	25.9	6719.98	6719.98	breast normal	
breast tumor GW00-391	28746	25.04	10402.11	20804.22	breast tumor	3.10
breast normal GW00-413	28798	32.51	226.94	226.94	breast normal	
breast tumor GW00-412	28797	26.37	5261.73	10523.46	breast tumor	46.37
breast normal GW00-235:238	27592-95	34.58	78.63	78.63	breast normal	
breast tumor GW00-231:234	27588-91	28.45	1812.86	1812.86	breast tumor	23.06
breast normal GW98-621	23656	25.26	9289.36	18578.72	breast normal	
breast tumor GW98-620	23655	25.66	7579.13	15158.26	breast tumor	-1.23
brain normal BB99-542	25507	22.52	37845.47	75690.94	brain normal	
brain normal BB99-406	25509	23.07	28574.8	57149.60	brain normal	
brain normal BB99-904	25546	23.85	19214.49	38428.98	brain normal	
brain stage 5 ALZ BB99-874	25502	25.98	6442.51	12885.02	brain stage 5 ALZ	-4.43
brain stage 5 ALZ BB99-887	25503	23.19	26936.06	53872.12	brain stage 5 ALZ	-1.06
brain stage 5 ALZ BB99-862	25504	23.42	23948.83	47897.66	brain stage 5 ALZ	-1.19
brain stage 5 ALZ BB99-927	25542	24.15	16419.33	32838.66	brain stage 5 ALZ	-1.74
CT lung KC	normal	25.63	7714.35	15428.70	CT lung	
lung 26 KC	normal	32.34	247.99	247.99	lung 26	
lung 27 KC	normal	33.71	122.77	122.77	lung 27	
lung 24 KC	COPD	32.47	231.47	231.47	lung 24	-17.21
lung 28 KC	COPD	32.63	213.14	213.14	lung 28	-18.70
lung 23 KC	COPD	31.2	444.95	444.95	lung 23	-8.96
lung 25 KC	normal	33.46	139.4	139.40	lung 25	
asthmatic lung ODO3112	29321	31.6	360.95	360.95	asthmatic lung	-11.04
asthmatic lung ODO3433	29323	28.66	1634.71	3269.42	asthmatic lung	-1.22
asthmatic lung	29322	26.36	5294.26	10588.52	asthmatic lung	2.66

ODO3397						
asthmatic lung	29325	28.23	2033.93	4067.86	asthmatic lung	1.02 --
ODO4928						
endo cells KC	control	30.68	580.47	580.47	endo cells	
endo VEGF KC		31.08	471.26	471.26	endo VEGF	-1.23
endo bFGF KC		32.25	259.04	259.04	endo bFGF	-2.24
heart Clontech	normal	27.28	3312.82	6625.64	heart	
heart (T-1) ischemic	29417	27.48	2979.22	5958.44	heart T-1	-1.11
heart (T-14) non-obstructive DCM	29422	27.74	2613.8	5227.60	heart T-14	-1.27
heart (T-3399) DCM	29426	26.66	4541.38	9082.76	heart T-3399	1.37
adenoid GW99-269	26162	27.83	2493.31	4986.62	adenoid	
tonsil GW98-280	22582	25.68	7506.04	15012.08	tonsil	
T cells PC00314	28453	27.18	3487.61	6975.22	T cells	
PBMNC		32.6	216.73	216.73	PBMNC	
monocyte		32.27	256.89	513.78	monocyte	
B cells PC00665	28455	27.83	2492.12	4984.24	B cells	
dendritic cells 28441		26.67	4528.97	9057.94	dendritic cells	
neutrophils	28440	28.4	1862.35	1862.35	neutrophils	
eosinophils	28446	31.69	344.59	689.18	eosinophils	
BM unstim		32.04	289.03	289.03	BM unstim	
BM stim		30.59	607.18	607.18	BM stim	2.10
osteo dif		28.43	1831.57	1831.57	osteo dif	3.42
osteo undif		30.83	536	536.00	osteo undif	
chondrocytes		26.74	4368.46	10921.15	chondrocytes	
OA Synovium IP12/01	29462	27.91	2391.03	2391.03	OA Synovium	
OA Synovium NP10/01	29461	27.4	3109.93	6219.86	OA Synovium	
OA Synovium NP57/00	28464	27.05	3729.47	7458.94	OA Synovium	
RA Synovium NP03/01	28466	25.53	8116.96	16233.92	RA Synovium	
RA Synovium NP71/00	28467	26.06	6167.42	12334.84	RA Synovium	
RA Synovium NP45/00	28475	25.35	8888.66	17777.32	RA Synovium	
OA bone (biobank)	29217	30.23	729.87	729.87	OA bone (biobank)	
OA bone Sample 1	J. Emory	27.65	2743.38	5486.76	OA bone	
OA bone Sample 2	J. Emory	28.02	2258.96	4517.92	OA bone	
Cartilage (pool)	Normal	25.82	7006.64	14013.28	Cartilage (pool)	
Cartilage (pool)	OA	27.22	3408.61	6817.22	Cartilage (pool)	-2.06
PBL uninfected	28441	24.24	15680.49	31360.98	PBL uninfected	
PBL HIV IIIB	28442	25.43	8521.98	17043.96	PBL HIV IIIB	-1.84
MRC5 uninfected (100%)	29158	25.58	7922.19	15844.38	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	32.02	291.12	582.24	MRC5 HSV strain F	-27.21
W12 cells	29179	26.03	6269.24	12538.48	W12 cells	
Keratinocytes	29180	25.43	8538.15	17076.30	Keratinocytes	
B-actin control		29.74	938.61			
genomic		28.79	1522.16			
1.00E+05		20.84	100000			
1.00E+05		21.4	100000			

1.00E+04		24.5	10000			
1.00E+04		25.2	10000			
1.00E+03		28.45	1000			
1.00E+03		29.25	1000			
1.00E+02		35.34	100			
1.00E+02		33.61	100			
1.00E+01		38.95	10			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg10033281G

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.13
colon tumor	1.59
colon tumor	-1.55
colon tumor	-1.65
lung tumor	-1.15
lung tumor	-1.34
lung tumor	-1.23
lung tumor	1.14
breast tumor	3.10
breast tumor	46.37
breast tumor	23.06
breast tumor	-1.23
brain stage 5 ALZ	-4.43
brain stage 5 ALZ	-1.06
brain stage 5 ALZ	-1.19
brain stage 5 ALZ	-1.74
lung 24	-17.21
lung 28	-18.70
lung 23	-8.96
asthmatic lung	-11.04
asthmatic lung	-1.22
asthmatic lung	2.66
asthmatic lung	1.02
endo VEGF	-1.23
endo bFGF	-2.24
heart T-1	-1.11
heart T-14	-1.27
heart T-3399	1.37
BM stim	2.10
osteo dif	3.42

Cartilage (pool)	-2.06
PBL HIV IIIB	-1.84
MRC5 HSV strain F	-27.21

Gene Name sbg1020829SGLT

5 Low overall expression in normal and disease samples. Highest normal expression in the whole brain, kidney, and thymus. Highest disease expression in the adenoid, tonsil, T cells, B cells, and eosinophils. Highly immune cell specific. Downregulation in 1 of 4 lung tumor samples and upregulation in 1 of 4 breast tumor samples indicates involvement in cancers of the lung and breast. Upregulation in 3 of 4 AD brain samples suggests an involvement in Alzheimer's disease. Downregulation in 3 of 3 COPD samples implies a role in chronic obstructive pulmonary disease. Downregulation in the stimulated bone marrow sample. Upregulation in the differentiated osteoblast sample. Upregulation in the HSV-infected MRC5 cells suggests that this

10 gene may be a host factor in HSV. Moderate to high expression in the OA and RA samples indicates a potential role in osteoarthritis and rheumatoid arthritis.

Sample sbg1020829SGLT	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	37.07, 40	7.33	0	3.67	3.06	16.34	59.89
Subcutaneous Adipose Zenbio	40, 40	0	0	0.00	0.96	52.36	0.00
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	32.13, 32.38	138.5	119.48	128.99	7.24	6.91	890.81
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	40, 40	0	0	0.00	2.17	23.04	0.00
Cervix	36.13, 40	12.82	0	6.41	2.42	20.66	132.44
Colon	36.93, 36.84	7.97	8.41	8.19	2.71	18.45	151.11
Endometrium	37.45, 37.41	5.84	5.98	5.91	0.73	68.21	403.14
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	36.53, 35.17	10.09	22.67	16.38	2.58	19.38	317.44
Jejunum	40, 35.73	0	16.2	8.10	6.60	7.58	61.36
Kidney	31.93, 31.01	155.27	269.39	212.33	2.12	23.58	5007.78
Liver	36.1, 35.88	13.05	14.82	13.94	1.50	33.33	464.50
Fetal Liver Clontech	35.06, 34.36	24.26	36.78	30.52	10.40	4.81	146.73
Lung	37.24, 40	6.63	0	3.32	2.57	19.46	64.49
Mammary Gland Clontech	34.25, 34.21	39.27	40.17	39.72	13.00	3.85	152.77
Myometrium	38.48, 35.31	3.16	20.87	12.02	2.34	21.37	256.73
Omentum	40, 38.91	0	2.45	1.23	3.94	12.69	15.55
Ovary	37.87, 37.06	4.56	7.37	5.97	4.34	11.52	68.72
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00

Parotid Gland	36.06, 37.07	13.32	7.31	10.32	5.48	9.12	94.11
Placenta Clontech	35.98, 38.73	13.96	2.72	8.34	5.26	9.51	79.28
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 40	0	0	0.00	1.23	40.65	0.00
Salivary Gland Clontech	37.05, 37.06	7.4	7.36	7.38	7.31	6.84	50.48
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	35.62, 35.72	17.34	16.35	16.85	4.92	10.16	171.19
Stomach	40, 40	0	1.61	0.81	2.73	18.32	14.74
Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00
Thymus Clontech	31.3, 31.09	226.24	257.15	241.70	9.89	5.06	1221.92
Thyroid	40, 40	0	0	0.00	2.77	18.05	0.00
Trachea Clontech	36.6, 36.64	9.68	9.44	9.56	9.71	5.15	49.23
Urinary Bladder	40, 40	0	0	0.00	5.47	9.14	0.00
Uterus	34.64, 36.65	31.06	9.41	20.24	5.34	9.36	189.47
genomic	29.07	853.08					
b-actin	27.08	2793.5					
1.00E+05	20.85	100000					
1.00E+05	21.11	100000					
1.00E+04	24.81	10000					
1.00E+04	24.95	10000					
1.00E+03	28.39	1000					
1.00E+03	28.9	1000					
1.00E+02	34.1	100					
1.00E+02	32.86	100					
1.00E+01	35.52	10					
1.00E+01	40	0					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg1020829SGLT	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detected/ 50 ng total RNA	Sample	Fold Change in Disease Populat ion
colon normal GW98-167	21941	31.06	206.55	413.10	colon normal	
colon tumor GW98-166	21940	31.18	193.59	387.18	colon tumor	-1.07
colon normal GW98-178	22080	30.74	244.37	488.74	colon normal	
colon tumor GW98-177	22060	30.37	299.28	598.56	colon tumor	1.22
colon normal GW98-561	23514	29.31	527.04	1054.08	colon normal	
colon tumor GW98-560	23513	31.86	134.48	268.96	colon tumor	-3.92

colon normal GW98-894	24691	31.84	135.33	270.66	colon normal	
colon tumor GW98-893	24690	31.9	131.57	263.14	colon tumor	-1.03
lung normal GW98-3	20742	28.81	689.14	1378.28	lung normal	
lung tumor GW98-2	20741	31.91	130.71	261.42	lung tumor	-5.27
lung normal GW97-179	20677	30.04	356.26	712.52	lung normal	
lung tumor GW97-178	20676	29.05	605.73	1211.46	lung tumor	1.70
lung normal GW98-165	21922	28.42	852.41	1704.82	lung normal	
lung tumor GW98-164	21921	30.51	277.13	554.26	lung tumor	-3.08
lung normal GW98-282	22584	31.23	188.34	376.68	lung normal	
lung tumor GW98-281	22583	30.46	285	570.00	lung tumor	1.51
breast normal GW00-392	28750	31.14	197.15	197.15	breast normal	
breast tumor GW00-391	28746	32.15	114.65	229.30	breast tumor	1.16
breast normal GW00-413	28798	34.87	26.64	26.64	breast normal	
breast tumor GW00-412	28797	31.83	136.42	272.84	breast tumor	10.24
breast normal GW00-235:238	27592-95	36.34	12.09	12.09	breast normal	
breast tumor GW00-231:234	27588-91	33.48	56.11	56.11	breast tumor	4.64
breast normal GW98-621	23656	32.39	100.78	201.56	breast normal	
breast tumor GW98-620	23655	31.4	171.82	343.64	breast tumor	1.70
brain normal BB99-542	25507	34.49	32.75	65.50	brain normal	
brain normal BB99-406	25509	34.01	42.2	84.40	brain normal	
brain normal BB99-904	25546	36.17	13.3	26.60	brain normal	
brain stage 5 ALZ BB99-874	25502	31.16	195.23	390.46	brain stage 5 ALZ	6.64
brain stage 5 ALZ BB99-887	25503	31.56	157.33	314.66	brain stage 5 ALZ	5.35
brain stage 5 ALZ BB99-862	25504	32.62	89.2	178.40	brain stage 5 ALZ	3.03
brain stage 5 ALZ BB99-927	25542	33.26	63.43	126.86	brain stage 5 ALZ	2.16
CT lung KC	normal	30.82	234.88	469.76	CT lung	
lung 26 KC	normal	30.21	325.42	325.42	lung 26	
lung 27 KC	normal	36.89	9	9.00	lung 27	
lung 24 KC	COPD	36.17	13.24	13.24	lung 24	-15.84
lung 28 KC	COPD	38.38	4.06	4.06	lung 28	-51.66
lung 23 KC	COPD	35.53	18.67	18.67	lung 23	-11.23
lung 25 KC	normal	34.37	34.83	34.83	lung 25	
asthmatic lung ODO3112	29321	33.65	51.41	51.41	asthmatic lung	-4.08
asthmatic lung ODO3433	29323	30.62	260.95	521.90	asthmatic lung	2.49
asthmatic lung ODO3397	29322	31.31	180.14	360.28	asthmatic lung	1.72
asthmatic lung ODO4928	29325	31.14	197.09	394.18	asthmatic lung	1.88
endo cells KC	control	32.56	92.23	92.23	endo cells	
endo VEGF KC		33.29	62.39	62.39	endo VEGF	-1.48
endo bFGF KC		32.55	92.65	92.65	endo bFGF	1.00
heart Clontech	normal	33.17	66.25	132.50	heart	
heart (T-1) ischemic	29417	33.07	70.16	140.32	heart T-1	1.06
heart (T-14) non-obstructive DCM	29422	34.64	30.13	60.26	heart T-14	-2.20
heart (T-3399) DCM	29426	32.53	93.63	187.26	heart T-3399	1.41

adenoid GW99-269	26162	28.92	650.55	1301.10	adenoid	
tonsil GW98-280	22582	27.11	1719.42	3438.84	tonsil	
T cells PC00314	28453	28.05	1037.04	2074.08	T cells	
PBMNC		36.57	10.71	10.71	PBMNC	
monocyte		33.22	64.68	129.36	monocyte	
B cells PC00665	28455	27.07	1757.79	3515.58	B cells	
dendritic cells 28441		33.77	48.05	96.10	dendritic cells	
neutrophils	28440	30.71	248.56	248.56	neutrophils	
eosinophils	28446	27.3	1549.7	3099.40	eosinophils	
BM unstim		30.06	352.26	352.26	BM unstim	
BM stim		34.14	39.39	39.39	BM stim	-8.94
osteo dif		36.29	12.42	12.42	osteo dif	12.42
osteo undif		40	0	0.00	osteo undif	
chondrocytes		32.11	117.39	293.48	chondrocytes	
OA Synovium IP12/01	29462	30.17	331.7	331.70	OA Synovium	
OA Synovium NP10/01	29461	32.05	120.98	241.96	OA Synovium	
OA Synovium NP57/00	28464	30.13	339.03	678.06	OA Synovium	
RA Synovium NP03/01	28466	31.28	182.96	365.92	RA Synovium	
RA Synovium NP71/00	28467	29.81	402.34	804.68	RA Synovium	
RA Synovium NP45/00	28475	30.22	324.14	648.28	RA Synovium	
OA bone (biobank)	29217	28.45	837.78	837.78	OA bone (biobank)	
OA bone Sample 1	J. Emory	30.21	325.03	650.06	OA bone	
OA bone Sample 2	J. Emory	29.8	406	812.00	OA bone	
Cartilage (pool)	Normal	31.09	203.28	406.56	Cartilage (pool)	
Cartilage (pool)	OA	32.18	112.77	225.54	Cartilage (pool)	-1.80
PBL uninfected	28441	29.17	567.22	1134.44	PBL uninfected	
PBL HIV IIIB	28442	30.73	246.69	493.38	PBL HIV IIIB	-2.30
MRC5 uninfected (100%)	29158	35.54	18.61	37.22	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	30.54	272.3	544.60	MRC5 HSV strain F	14.63
W12 cells	29179	32.28	107.25	214.50	W12 cells	
Keratinocytes	29180	34.27	36.84	73.68	Keratinocytes	
B-actin control		27.03	1793.92			
genomic		27.77	1204.8			
1.00E+05		19.84	100000			
1.00E+05		19.86	100000			
1.00E+04		23.46	10000			
1.00E+04		23.8	10000			
1.00E+03		27.45	1000			
1.00E+03		27.94	1000			
1.00E+02		33.86	100			
1.00E+02		31.41	100			
1.00E+01		40	0			
1.00E+01		36.88	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg1020829SGLT

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.07
colon tumor	1.22
colon tumor	-3.92
colon tumor	-1.03
lung tumor	-5.27
lung tumor	1.70
lung tumor	-3.08
lung tumor	1.51
breast tumor	1.16
breast tumor	10.24
breast tumor	4.64
breast tumor	1.70
brain stage 5 ALZ	6.64
brain stage 5 ALZ	5.35
brain stage 5 ALZ	3.03
brain stage 5 ALZ	2.16
lung 24	-15.84
lung 28	-51.66
lung 23	-11.23
asthmatic lung	-4.08
asthmatic lung	2.49
asthmatic lung	1.72
asthmatic lung	1.88
endo VEGF	-1.48
endo bFGF	1.00
heart T-1	1.06
heart T-14	-2.20
heart T-3399	1.41
BM stim	-8.94
osteo dif	12.42
Cartilage (pool)	-1.80
PBL HIV IIIB	-2.30
MRC5 HSV strain F	14.63

5 Gene Name sbg1005450UDPGT

Low to moderate overall expression. Highest normal expression in endometrium, esophagus, and spleen with lower levels of expression in cerebellum, hypothalamus, rectum, and uterus. Highest disease expression in one of the OA synovium samples. Downregulation in 1 of 4 colon tumor samples is sufficient to make a disease claim in cancer of the colon. Upregulation in 1 of 4 lung tumor samples indicates a potential role for this gene in cancer of the lung. Downregulation in 2 of 4 AD brain samples suggests an involvement in Alzheimer's disease. Downregulation in 3 of 3 COPD lung samples and 4 of 4 asthmatic lung samples suggests involvement in chronic obstructive

pulmonary disease and asthma. Upregulation in the HSV-infected MRC5 cells suggests that this gene may be a host factor in HSV. Moderate expression in the B cells and the dendritic cells.

Sample sbg1005450UDPGT	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Averag e GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0.15	0.17	0.16	3.06	16.34	2.61
Subcutaneous Adipose Zenbio	40, 40	0	0	0.00	0.96	52.36	0.00
Adrenal Gland Clontech	40, 40	0	0.14	0.07	0.61	81.97	5.74
Whole Brain Clontech	33.74, 40	12.07	0	6.04	7.24	6.91	41.68
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	32.07, 33.2	32.85	16.64	24.75	2.17	23.04	570.16
Cervix	40, 40	0	0	0.00	2.42	20.66	0.00
Colon	40, 35.16	0	5.12	2.56	2.71	18.45	47.23
Endometrium	32.73, 31.85	22.19	37.5	29.85	0.73	68.21	2035.81
Esophagus	32.67, 29.39	22.91	165.34	94.13	1.37	36.50	3435.22
Heart Clontech	37.12, 35.03	1.58	5.55	3.57	1.32	37.88	135.04
Hypothalamus	34.08, 40	9.84	0	4.92	0.32	155.28	763.98
Ileum	34.35	8.33		8.33	2.58	19.38	161.43
Jejunum	40, 40	0	0	0.00	6.60	7.58	0.00
Kidney	38.89, 40	0.54	0	0.27	2.12	23.58	6.37
Liver	36.32, 40	2.55	0	1.28	1.50	33.33	42.50
Fetal Liver Clontech	36.96	1.74		1.74	10.40	4.81	8.37
Lung	40, 40	0	0	0.00	2.57	19.46	0.00
Mammary Gland Clontech	40, 40	0	0	0.00	13.00	3.85	0.00
Myometrium	40, 38.22	0	0.82	0.41	2.34	21.37	8.76
Omentum	36.17, 40	2.8	0	1.40	3.94	12.69	17.77
Ovary	40, 40	0	0	0.00	4.34	11.52	0.00
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 38.35	0	0.75	0.38	1.57	31.85	11.94
Parotid Gland	40, 40	0	0	0.00	5.48	9.12	0.00
Placenta Clontech	39.06, 35.49	0.49	4.22	2.36	5.26	9.51	22.39
Prostate	38.81, 40	0.57	0	0.29	3.00	16.67	4.75
Rectum	35.22, 33.25	4.94	16.2	10.57	1.23	40.65	429.67
Salivary Gland Clontech	32.56, 34.56	24.55	7.36	15.96	7.31	6.84	109.13
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	34.26, 40	8.8	0	4.40	1.21	41.32	181.82
Small Intestine Clontech	40	0	6.23	3.12	0.98	51.07	159.09
Spleen	40, 27.36	0	560.92	280.46	4.92	10.16	2850.20
Stomach	33.49, 39.12	13.98	0.47	7.23	2.73	18.32	132.33

Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00
Thymus Clontech	40, 35.33	0	4.64	2.32	9.89	5.06	11.73
Thyroid	37.18, 35.52	1.53	4.13	2.83	2.77	18.05	51.08
Trachea Clontech	40, 40	0	0	0.00	9.71	5.15	0.00
Urinary Bladder	40, 40	0	0.16	0.08	5.47	9.14	0.73
Uterus	30.11	106.94	0	53.47	5.34	9.36	500.66
genomic	35.81	3.47					
b-actin	26.86	757.01					
1.00E+05	18.99	100000					
1.00E+05	19.13	100000					
1.00E+04	22.43	10000					
1.00E+04	22.31	10000					
1.00E+03	25.74	1000					
1.00E+03	25.99	1000					
1.00E+02	31.47	100					
1.00E+02	29.82	100					
1.00E+01	40	0					
1.00E+01	40	0					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	26.02	-1					
NTC	40	0					

Sample sbg1005450UDPGT	Reg number (GSK identifie r)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	40	0.17	0.34	colon normal	
colon tumor GW98-166	21940	39.88	0.29	0.58	colon tumor	1.71
colon normal GW98-178	22080	40	0	0.00	colon normal	
colon tumor GW98-177	22060	40	0	0.00	colon tumor	0.00
colon normal GW98-561	23514	40	0	0.00	colon normal	
colon tumor GW98-560	23513	40	0	0.00	colon tumor	0.00
colon normal GW98-894	24691	33.84	10.47	20.94	colon normal	
colon tumor GW98-893	24690	40	0	0.00	colon tumor	-20.94
lung normal GW98-3	20742	40	0	0.00	lung normal	
lung tumor GW98-2	20741	40	0	0.00	lung tumor	0.00
lung normal GW97-179	20677	31.67	37.94	75.88	lung normal	
lung tumor GW97-178	20676	33.08	16.47	32.94	lung tumor	-2.30
lung normal GW98-165	21922	40	0	0.00	lung normal	
lung tumor GW98-164	21921	40	0	0.00	lung tumor	0.00
lung normal GW98-282	22584	40	0	0.00	lung normal	
lung tumor GW98-281	22583	35.03	5.16	10.32	lung tumor	10.32
breast normal GW00-392	28750	32.64	21.38	21.38	breast normal	

breast tumor GW00-391	28746	31.67	37.98	75.96	breast tumor	3.55
breast normal GW00-413	28798	32.54	22.63	22.63	breast normal	
breast tumor GW00-412	28797	29.23	161.71	323.42	breast tumor	14.29
breast normal GW00-235:238	27592-95	37.05	1.55	1.55	breast normal	
breast tumor GW00-231:234	27588-91	35.03	5.17	5.17	breast tumor	3.34
breast normal GW98-621	23656	34.12	8.87	17.74	breast normal	
breast tumor GW98-620	23655	40	0	0.00	breast tumor	-17.74
brain normal BB99-542	25507	34.28	8.05	16.10	brain normal	
brain normal BB99-406	25509	40	0	0.00	brain normal	
brain normal BB99-904	25546	40	0	0.00	brain normal	
brain stage 5 ALZ BB99-874	25502	38.8	0.55	1.10	brain stage 5 ALZ	-4.88
brain stage 5 ALZ BB99-887	25503	40	0	0.00	brain stage 5 ALZ	-5.37
brain stage 5 ALZ BB99-862	25504	36.16	2.64	5.28	brain stage 5 ALZ	-1.02
brain stage 5 ALZ BB99-927	25542	40	0	0.00	brain stage 5 ALZ	-5.37
CT lung KC	normal	36.61	2.02	4.04	CT lung	
lung 26 KC	normal				lung 26	
lung 27 KC	normal	40	0	0.00	lung 27	
lung 24 KC	COPD	40	0	0.00	lung 24	-1.35
lung 28 KC	COPD	40	0	0.00	lung 28	-1.35
lung 23 KC	COPD	40	0	0.00	lung 23	-1.35
lung 25 KC	normal	40	0	0.00	lung 25	
asthmatic lung ODO3112	29321	38.19	0.79	0.79	asthmatic lung	-1.70
asthmatic lung ODO3433	29323	36.09	2.76	5.52	asthmatic lung	4.10
asthmatic lung ODO3397	29322	40	0	0.00	asthmatic lung	-1.35
asthmatic lung ODO4928	29325	40	0	0.00	asthmatic lung	-1.35
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		40	0	0.00	endo bFGF	0.00
heart Clontech	normal	40	0	0.00	heart	
heart (T-1) ischemic	29417	38.36	0.71	1.42	heart T-1	1.42
heart (T-14) non-obstructive DCM	29422	40	0	0.00	heart T-14	0.00
heart (T-3399) DCM	29426	40	0	0.00	heart T-3399	0.00
adenoid GW99-269	26162	38.96	0.5	1.00	adenoid	
tonsil GW98-280	22582	35.44	4.04	8.08	tonsil	
T cells PC00314	28453	38.83	0.54	1.08	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		35.1	4.94	9.88	monocyte	
B cells PC00665	28455	33.32	14.31	28.62	B cells	
dendritic cells 28441		32.53	22.85	45.70	dendritic cells	
neutrophils	28440	34.43	7.39	7.39	neutrophils	
eosinophils	28446	40	0	0.00	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim		34.12	8.87	8.87	BM stim	8.87

osteo dif		40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		34.51	7.05	17.63	chondrocytes	
OA Synovium IP12/01	29462	40	0	0.00	OA Synovium	
OA Synovium NP10/01	29461	27.21	538.51	1077.02	OA Synovium	
OA Synovium NP57/00	28464	33.5	12.85	25.70	OA Synovium	
RA Synovium NP03/01	28466	39.09	0.46	0.92	RA Synovium	
RA Synovium NP71/00	28467	40	0	0.00	RA Synovium	
RA Synovium NP45/00	28475	40	0	0.00	RA Synovium	
OA bone (biobank)	29217	40	0	0.00	OA bone (biobank)	
OA bone Sample 1	J. Emory	35.23	4.59	9.18	OA bone	
OA bone Sample 2	J. Emory	37.1	1.51	3.02	OA bone	
Cartilage (pool)	Normal	35.45	4.01	8.02	Cartilage (pool)	
Cartilage (pool)	OA	40	0	0.00	Cartilage (pool)	-8.02
PBL uninfected	28441	40	0	0.00	PBL uninfected	
PBL HIV IIIB	28442	40	0	0.00	PBL HIV IIIB	0.00
MRC5 uninfected (100%)	29158	40	0.17	0.34	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	30.15	93.76	187.52	MRC5 HSV strain F	551.53
W12 cells	29179	40	0	0.00	W12 cells	
Keratinocytes	29180	35.72	3.44	6.88	Keratinocytes	
B-actin control		26.57	788.4			
genomic		25.69	1326.94			
1.00E+05		18.72	100000			
1.00E+05		18.74	100000			
1.00E+04		22.11	10000			
1.00E+04		22.15	10000			
1.00E+03		25.57	1000			
1.00E+03		25.54	1000			
1.00E+02		31.37	100			
1.00E+02		29.65	100			
1.00E+01		40	0			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg1005450UDPGT

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.71
colon tumor	0.00
colon tumor	0.00
colon tumor	-20.94

lung tumor	0.00
lung tumor	-2.30
lung tumor	0.00
lung tumor	10.32
breast tumor	3.55
breast tumor	14.29
breast tumor	3.34
breast tumor	-17.74
brain stage 5 ALZ	-4.88
brain stage 5 ALZ	-5.37
brain stage 5 ALZ	-1.02
brain stage 5 ALZ	-5.37
lung 24	-1.35
lung 28	-1.35
lung 23	-1.35
asthmatic lung	-1.70
asthmatic lung	4.10
asthmatic lung	-1.35
asthmatic lung	-1.35
endo VEGF	0.00
endo bFGF	0.00
heart T-1	1.42
heart T-14	0.00
heart T-3399	0.00
BM stim	8.87
osteo undif	0.00
Cartilage (pool)	-8.02
PBL HIV IIIB	0.00
MRC5 HSV strain F	551.53

Gene Name sbg1002620T1a

- 5 Moderate overall expression. Highest normal expression in the whole brain, endometrium, myometrium, placenta, and rectum. Highest disease expression in the one of the colon normal/tumor pairs, the normal lung samples, one of the asthmatic lung samples, the neutrophils, the eosinophils, and one of the RA synovium samples. Expressed at high levels in all of the samples representative of the GI tract indicating a potential role for this gene in IBS, IBD, and Crohn's disease. Downregulation in 1 of 3 COPD lung samples suggests involvement in chronic obstructive pulmonary disease. Upregulation in 1 of 4 asthmatic lung samples implies a role in asthma. High expression in the OA synovium and bone samples as well as in the RA synovium samples. Also high expression in the chondrocytes. Variable expression in the immune cells with highest expression in the neutrophils and eosinophils and lowest expression in the dendritic cells. Corroborating high expression in B and T cells as well as OA samples implicates this gene in osteoarthritis and rheumatoid arthritis.
- 10
- 15

Sample sbg1002620T1a	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18 S rRNA (ng)	copies of mRNA detected/ 50 ng total RNA
-------------------------	------------------------	--	--	--------------------------	---------------------	----------------------------------	---

Subcutaneous Adipocytes Zenbio	35.04, 34.4	201.66	274.43	238.05	3.06	16.34	3889.62
Subcutaneous Adipose Zenbio	38.03, 38.45	48.67	39.85	44.26	0.96	52.36	2317.28
Adrenal Gland Clontech	38.71, 38.14	35.25	46.23	40.74	0.61	81.97	3339.34
Whole Brain Clontech	29.27, 29.32	3152.23	3071.49	3111.86	7.24	6.91	21490.75
Fetal Brain Clontech	40, 37.57	0	60.7	30.35	0.48	103.95	3154.89
Cerebellum Clontech	39.37, 39.14	25.78	28.75	27.27	2.17	23.04	628.23
Cervix	34.05, 34.32	323.57	285.02	304.30	2.42	20.66	6287.09
Colon	32.64, 32.98	633.12	537.54	585.33	2.71	18.45	10799.45
Endometrium	34.44, 33.84	269.09	357.16	313.13	0.73	68.21	21359.14
Esophagus	35.48, 35.21	163.52	186.15	174.84	1.37	36.50	6380.84
Heart Clontech	38.67, 39.08	35.94	29.52	32.73	1.32	37.88	1239.77
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	33.07, 32.9	516.19	559.94	538.07	2.58	19.38	10427.62
Jejunum	30.58, 30.66	1688.39	1625.61	1657.00	6.60	7.58	12553.03
Kidney	34.9, 33.68	216.07	385.19	300.63	2.12	23.58	7090.33
Liver	37.17, 36.49	73.4	101.31	87.36	1.50	33.33	2911.83
Fetal Liver Clontech	33.99, 34.79	332.15	227.82	279.99	10.40	4.81	1346.08
Lung	34.67, 34.06	240.47	321.54	281.01	2.57	19.46	5467.02
Mammary Gland Clontech	29.3, 29.19	3098.36	3272.39	3185.38	13.00	3.85	12251.44
Myometrium	32.45, 31.79	692.54	946.75	819.65	2.34	21.37	17513.78
Omentum	32.88, 33.43	563.23	434.44	498.84	3.94	12.69	6330.39
Ovary	33.02, 32.92	528.43	553.26	540.85	4.34	11.52	6230.93
Pancreas	37.31, 39.81	68.49	20.84	44.67	0.81	61.80	2760.51
Head of Pancreas	38.5, 39.16	38.99	28.45	33.72	1.57	31.85	1073.89
Parotid Gland	34.48, 34.22	263.15	298.49	280.82	5.48	9.12	2562.23
Placenta Clontech	31.16, 30.91	1280.82	1442.99	1361.91	5.26	9.51	12945.87
Prostate	33.5, 33.11	420.13	506.76	463.45	3.00	16.67	7724.08
Rectum	34.48, 33.88	263.61	350.22	306.92	1.23	40.65	12476.22
Salivary Gland Clontech	34.48, 34.32	263.4	284.18	273.79	7.31	6.84	1872.71
Skeletal Muscle Clontech	40, 39.37	0	25.73	12.87	1.26	39.68	510.52
Skin	35.52, 35.13	160.58	193.62	177.10	1.21	41.32	7318.18
Small Intestine Clontech	36.79, 36.59	87.74	96.5	92.12	0.98	51.07	4704.80
Spleen	34.45, 34.51	267.45	260	263.73	4.92	10.16	2680.13
Stomach	35.16, 33.89	191.03	348.48	269.76	2.73	18.32	4940.57
Testis Clontech	38.19, 37.07	45.22	76.91	61.07	0.57	87.87	5365.99
Thymus Clontech	33.74, 33.57	374.59	406.79	390.69	9.89	5.06	1975.18
Thyroid	34.18, 33.46	304.38	427.57	365.98	2.77	18.05	6606.05
Trachea Clontech	32.67, 31.27	623.94	1213.65	918.80	9.71	5.15	4731.18
Urinary Bladder	32.07, 31.34	830.04	1176.15	1003.10	5.47	9.14	9169.06
Uterus	31.75, 31.37	968.5	1157.09	1062.80	5.34	9.36	9951.26
genomic	31.33	1181.44					
b-actin	28.56	4411.32					
1.00E+05	22.12	100000					

1.00E+05	22.12	100000					
1.00E+04	26.72	10000					
1.00E+04	26.91	10000					
1.00E+03	31.28	1000					
1.00E+03	31.5	1000					
1.00E+02	36.35	100					
1.00E+02	37.09	100					
1.00E+01	40	10					
1.00E+01	40	10					
1.00E-00	40	1					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg1002620T1a	Reg number (GSK identifie r)	Ct	Mean GOI copies	copies of mRNA detected/ 50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	24.54	22693.01	45386.02	colon normal	
colon tumor GW98-166	21940	24.18	26862.61	53725.22	colon tumor	1.18
colon normal GW98-178	22080	27.08	6895.34	13790.68	colon normal	
colon tumor GW98-177	22060	28.41	3692.19	7384.38	colon tumor	-1.87
colon normal GW98-561	23514	26.58	8698.68	17397.36	colon normal	
colon tumor GW98-560	23513	27.85	4799.22	9598.44	colon tumor	-1.81
colon normal GW98-894	24691	25.9	11972.57	23945.14	colon normal	
colon tumor GW98-893	24690	28.04	4396.4	8792.80	colon tumor	-2.72
lung normal GW98-3	20742	24.25	26016.9	52033.80	lung normal	
lung tumor GW98-2	20741	27.64	5300.37	10600.74	lung tumor	-4.91
lung normal GW97-179	20677	25.1	17476.66	34953.32	lung normal	
lung tumor GW97-178	20676	25.53	14274.54	28549.08	lung tumor	-1.22
lung normal GW98-165	21922	24.62	21917.37	43834.74	lung normal	
lung tumor GW98-164	21921	25.64	13526.49	27052.98	lung tumor	-1.62
lung normal GW98-282	22584	27.08	6884.03	13768.06	lung normal	
lung tumor GW98-281	22583	25.37	15385.8	30771.60	lung tumor	2.23
breast normal GW00-392	28750	26.07	11065.25	11065.25	breast normal	
breast tumor GW00-391	28746	26.87	7611.48	15222.96	breast tumor	1.38
breast normal GW00-413	28798	28.65	3294.68	3294.68	breast normal	
breast tumor GW00-412	28797	28.52	3496.94	6993.88	breast tumor	2.12
breast normal GW00-235:238	27592-95	29.47	2243.69	2243.69	breast normal	
breast tumor GW00-231:234	27588-91	25.83	12385.23	12385.23	breast tumor	5.52
breast normal GW98-621	23656	26.05	11188.07	22376.14	breast normal	
breast tumor GW98-620	23655	26.03	11303.95	22607.90	breast tumor	1.01

brain normal BB99-542	25507	27.68	5198.79	10397.58	brain normal	
brain normal BB99-406	25509	29.81	1909.01	3818.02	brain normal	
brain normal BB99-904	25546	31.84	735.25	1470.50	brain normal	
brain stage 5 ALZ BB99-874	25502	28.43	3650.66	7301.32	brain stage 5 ALZ	1.40
brain stage 5 ALZ BB99-887	25503	29.01	2785.56	5571.12	brain stage 5 ALZ	1.07
brain stage 5 ALZ BB99-862	25504	29.65	2059.62	4119.24	brain stage 5 ALZ	-1.27
brain stage 5 ALZ BB99-927	25542	30.01	1742.3	3484.60	brain stage 5 ALZ	-1.50
CT lung KC	normal	25.49	14553.17	29106.34	CT lung	
lung 26 KC	normal	31.8	749.93	749.93	lung 26	
lung 27 KC	normal	33.35	362.66	362.66	lung 27	
lung 24 KC	COPD	30.67	1275.68	1275.68	lung 24	-6.03
lung 28 KC	COPD	29.25	2490.39	2490.39	lung 28	-3.09
lung 23 KC	COPD	30.11	1661.24	1661.24	lung 23	-4.63
lung 25 KC	normal	32.45	553.75	553.75	lung 25	
asthmatic lung ODO3112	29321	27.3	6215.19	6215.19	asthmatic lung	-1.24
asthmatic lung ODO3433	29323	26.66	8407.3	16814.60	asthmatic lung	2.19
asthmatic lung ODO3397	29322	24.06	28466.73	56933.46	asthmatic lung	7.40
asthmatic lung ODO4928	29325	26.22	10313.71	20627.42	asthmatic lung	2.68
endo cells KC	control	40	0	0.00	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	0.00
endo bFGF KC		40	0	0.00	endo bFGF	0.00
heart Clontech	normal	27.58	5449.78	10899.56	heart	
heart (T-1) ischemic	29417	28.42	3670.86	7341.72	heart T-1	-1.48
heart (T-14) non- obstructive DCM	29422	27.18	6570.11	13140.22	heart T-14	1.21
heart (T-3399) DCM	29426	26.23	10277.2	20554.40	heart T-3399	1.89
adenoid GW99-269	26162	31.98	688.86	1377.72	adenoid	
tonsil GW98-280	22582	29.31	2421.67	4843.34	tonsil	
T cells PC00314	28453	29.53	2178.21	4356.42	T cells	
PBMNC		33.23	383.88	383.88	PBMNC	
monocyte		31.07	1057.9	2115.80	monocyte	
B cells PC00665	28455	35.97	106.01	212.02	B cells	
dendritic cells 28441		33.56	328.62	657.24	dendritic cells	
neutrophils	28440	22.32	64510.36	64510.36	neutrophils	
eosinophils	28446	24.18	26910.17	53820.34	eosinophils	
BM unstim		30.35	1480.07	1480.07	BM unstim	
BM stim		31.71	782.56	782.56	BM stim	-1.89
osteo dif		31.42	895.71	895.71	osteo dif	2.03
osteo undif		32.93	440.66	440.66	osteo undif	
chondrocytes		28.98	2820.8	7052.00	chondrocytes	
OA Synovium IP12/01	29462	25.37	15383.84	15383.84	OA Synovium	
OA Synovium NP10/01	29461	27.12	6763.44	13526.88	OA Synovium	

OA Synovium NP57/00	28464	26.48	9130.81	18261.62	OA Synovium	
RA Synovium NP03/01	28466	27.78	4967.23	9934.46	RA Synovium	
RA Synovium NP71/00	28467	24.72	20923.66	41847.32	RA Synovium	
RA Synovium NP45/00	28475	26.15	10658.82	21317.64	RA Synovium	
OA bone (biobank)	29217	28.68	3248.19	3248.19	OA bone (biobank)	
OA bone Sample 1	J. Emory	27.19	6545.82	13091.64	OA bone	
OA bone Sample 2	J. Emory	27.24	6384.92	12769.84	OA bone	
Cartilage (pool)	Normal	26.28	10016.65	20033.30	Cartilage (pool)	
Cartilage (pool)	OA	26.67	8342.92	16685.84	Cartilage (pool)	-1.20
PBL uninfected	28441	31.05	1069.84	2139.68	PBL uninfected	
PBL HIV IIIB	28442	31.7	788.06	1576.12	PBL HIV IIIB	-1.36
MRC5 uninfected (100%)	29158	26.37	9631.13	19262.26	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	28.38	3747.38	7494.76	MRC5 HSV strain F	-2.57
W12 cells	29179	35.15	155.25	310.50	W12 cells	
Keratinocytes	29180	34.93	172.87	345.74	Keratinocytes	
B-actin control		28.06	4342.74			
genomic		30.54	1356.79			
1.00E+05		21.39	100000			
1.00E+05		21.64	100000			
1.00E+04		26.21	10000			
1.00E+04		26.24	10000			
1.00E+03		30.9	1000			
1.00E+03		30.97	1000			
1.00E+02		36.34	100			
1.00E+02		36.22	100			
1.00E+01		40	10			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg1002620T1a

5

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.18
colon tumor	-1.87
colon tumor	-1.81
colon tumor	-2.72
lung tumor	-4.91
lung tumor	-1.22
lung tumor	-1.62
lung tumor	2.23
breast tumor	1.38

breast tumor	2.12
breast tumor	5.52
breast tumor	1.01
brain stage 5 ALZ	1.40
brain stage 5 ALZ	1.07
brain stage 5 ALZ	-1.27
brain stage 5 ALZ	-1.50
lung 24	-6.03
lung 28	-3.09
lung 23	-4.63
asthmatic lung	-1.24
asthmatic lung	2.19
asthmatic lung	7.40
asthmatic lung	2.68
endo VEGF	0.00
endo bFGF	0.00
heart T-1	-1.48
heart T-14	1.21
heart T-3399	1.89
BM stim	-1.89
osteo dif	2.03
Cartilage (pool)	-1.20
PBL HIV IIIB	-1.36
MRC5 HSV strain F	-2.57

Gene Name sbg1002620T1b

5 Moderate to high overall expression. Highest normal expression in whole brain, endometrium, jejunum, placenta, thymus, and urinary bladder. Highest disease expression in one of the colon normal/tumor pairs, one of the normal lung samples, one of the asthmatic lung samples, the neutrophils, and the eosinophils. Strong expression in all of the GI tract samples implicates this gene in IBS, IBD, and Crohn's disease. Downregulation in 1 of 4 lung tumor samples is sufficient to make a disease claim in cancer of the lung. Downregulation in 3 of 3 COPD lung samples suggests involvement in chronic obstructive pulmonary disease. Upregulation in 1 of 4 asthmatic lung samples implies a role in asthma. Upregulation in 2 of 3 heart samples suggests this gene may play a role in non-obstructive and obstructive dilated cardiac myopathy. High expression in the RA and OA synovium samples as well as high expression in the chondrocytes and T cells implicates this gene in osteoarthritis and rheumatoid arthritis.

15

Sample sbg1002620T1b	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected /50 ng total RNA
Subcutaneous Adipocytes Zenbio	31.35, 31.44	58.54	55.11	56.83	3.06	16.34	928.51
Subcutaneous Adipose Zenbio	35.12, 34.21	5	9.05	7.03	0.96	52.36	367.80
Adrenal Gland Clontech	40, 34.29	0	8.61	4.31	0.61	81.97	352.87
Whole Brain Clontech	26.02, 26.06	1897.9	1849.19	1873.55	7.24	6.91	12938.85

Fetal Brain Clontech	40, 36.43	0	2.13	1.07	0.48	103.95	110.71
Cerebellum Clontech	40, 36.05	0	2.74	1.37	2.17	23.04	31.57
Cervix	32.23, 33.04	33.11	19.47	26.29	2.42	20.66	543.18
Colon	30.44, 30.45	105.93	105.29	105.61	2.71	18.45	1948.52
Endometrium	30.86, 30.56	80.75	97.92	89.34	0.73	68.21	6093.79
Esophagus	33.03, 32.34	19.62	30.66	25.14	1.37	36.50	917.52
Heart Clontech	40, 35.05	0	5.26	2.63	1.32	37.88	99.62
Hypothalamus	40, 36.17	0	2.53	1.27	0.32	155.28	196.43
Ileum	31.25, 30.31	62.52	115.58	89.05	2.58	19.38	1725.78
Jejunum	27.75, 27.93	612.01	543.46	577.74	6.60	7.58	4376.78
Kidney	32.59, 31.86	26.03	42.14	34.09	2.12	23.58	803.89
Liver	34.66, 34.5	6.77	7.52	7.15	1.50	33.33	238.17
Fetal Liver Clontech	29.08, 28.58	256.83	356.67	306.75	10.40	4.81	1474.76
Lung	30.74, 30.68	87.44	90.91	89.18	2.57	19.46	1734.92
Mammary Gland Clontech	27.49, 26.81	725.02	1132.42	928.72	13.00	3.85	3572.00
Myometrium	31.2, 30.29	64.54	117.26	90.90	2.34	21.37	1942.31
Omentum	31.19, 30.12	65.05	130.86	97.96	3.94	12.69	1243.08
Ovary	30.24, 30.54	120.95	99.3	110.13	4.34	11.52	1268.72
Pancreas	36.01, 36.55	2.81	1.97	2.39	0.81	61.80	147.71
Head of Pancreas	33.95, 35.73	10.72	3.36	7.04	1.57	31.85	224.20
Parotid Gland	32.16, 33.16	34.51	18.05	26.28	5.48	9.12	239.78
Placenta Clontech	28.42, 28.02	395.01	512.77	453.89	5.26	9.51	4314.54
Prostate	30.61, 31.28	95.23	61.5	78.37	3.00	16.67	1306.08
Rectum	30.5, 30.93	101.73	76.9	89.32	1.23	40.65	3630.69
Salivary Gland Clontech	31.17, 31.07	65.95	70.23	68.09	7.31	6.84	465.73
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	34.37, 33.12	8.18	18.53	13.36	1.21	41.32	551.86
Small Intestine Clontech	36.71, 34.96	1.78	5.55	3.67	0.98	51.07	187.18
Spleen	30.54, 31.29	99.47	60.88	80.18	4.92	10.16	814.79
Stomach	32.4, 31.53	29.49	52	40.75	2.73	18.32	746.25
Testis Clontech	34.4, 35.19	8.03	4.79	6.41	0.57	87.87	563.27
Thymus Clontech	27.18, 27.12	888.84	924.29	906.57	9.89	5.06	4583.24
Thyroid	32.17, 30.89	34.36	79.27	56.82	2.77	18.05	1025.54
Trachea Clontech	30.01, 29.25	140.31	230.28	185.30	9.71	5.15	954.15
Urinary Bladder	28.33, 27.87	420.47	565.71	493.09	5.47	9.14	4507.22
Uterus	29.09, 28.81	255.27	308	281.64	5.34	9.36	2637.03
genomic	27.16	900.78					
b-actin	27.4	769.87					
1.00E+05	19.87	100000					
1.00E+05	19.95	100000					
1.00E+04	23.4	10000					
1.00E+04	23.39	10000					
1.00E+03	26.94	1000					
1.00E+03	26.95	1000					
1.00E+02	31.02	100					

1.00E+02	30.96	100				
1.00E+01	33.46	10				
1.00E+01	40	0				
1.00E-00	40	0				
1.00E-00	40	0				
NTC	40	0				
NTC	40	0				

Sample sbg1002620Tib	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detected /50 ng total RNA	Sample	Fold Chang e in Diseas e Popula tion
colon normal GW98-167	21941	22.85	18631.2	37262.40	colon normal	
colon tumor GW98-166	21940	22.51	23090.96	46181.92	colon tumor	1.24
colon normal GW98-178	22080	25.49	3620.45	7240.90	colon normal	
colon tumor GW98-177	22060	26.88	1527.3	3054.60	colon tumor	-2.37
colon normal GW98-561	23514	25.37	3901.36	7802.72	colon normal	
colon tumor GW98-560	23513	26.08	2512.21	5024.42	colon tumor	-1.55
colon normal GW98-894	24691	23.78	10441.49	20882.98	colon normal	
colon tumor GW98-893	24690	25.54	3515.48	7030.96	colon tumor	-2.97
lung normal GW98-3	20742	22.6	21810.56	43621.12	lung normal	
lung tumor GW98-2	20741	26.19	2349.32	4698.64	lung tumor	-9.28
lung normal GW97-179	20677	23.38	13423.28	26846.56	lung normal	
lung tumor GW97-178	20676	24.51	6653.03	13306.06	lung tumor	-2.02
lung normal GW98-165	21922	23.68	11120.91	22241.82	lung normal	
lung tumor GW98-164	21921	24.37	7242.32	14484.64	lung tumor	-1.54
lung normal GW98-282	22584	25.05	4745.83	9491.66	lung normal	
lung tumor GW98-281	22583	23.57	11943.28	23886.56	lung tumor	2.52
breast normal GW00-392	28750	24.84	5415.88	5415.88	breast normal	
breast tumor GW00-391	28746	24.98	4973.9	9947.80	breast tumor	1.84
breast normal GW00-413	28798	24.69	5954.77	5954.77	breast normal	
breast tumor GW00-412	28797	26.38	2081.99	4163.98	breast tumor	-1.43
breast normal GW00-235:238	27592-95	25.04	4792.18	4792.18	breast normal	
breast tumor GW00-231:234	27588-91	23.63	11520.86	11520.86	breast tumor	2.40
breast normal GW98-621	23656	23.22	14836.24	29672.48	breast normal	
breast tumor GW98-620	23655	24.24	7879	15758.00	breast tumor	-1.88
brain normal BB99-542	25507	25.16	4447.15	8894.30	brain normal	
brain normal BB99-406	25509	27.05	1377.71	2755.42	brain normal	
brain normal BB99-904	25546	29.35	330.53	661.06	brain normal	
brain stage 5 ALZ BB99-874	25502	27.64	956.16	1912.32	brain stage 5 ALZ	-2.15
brain stage 5 ALZ	25503	27.02	1400.04	2800.08	brain stage 5	-1.47

BB99-887					ALZ	
brain stage 5 ALZ BB99-862	25504	27.4	1105.21	2210.42	brain stage 5 ALZ	-1.86
brain stage 5 ALZ BB99-927	25542	27.1	1336.02	2672.04	brain stage 5 ALZ	-1.54
CT lung KC	normal	23.52	12295.29	24590.58	CT lung	
lung 26 KC	normal	31.42	91.19	91.19	lung 26	
lung 27 KC	normal	32.34	51.71	51.71	lung 27	
lung 24 KC	COPD	31.27	100.29	100.29	lung 24	-61.80
lung 28 KC	COPD	28.64	511.37	511.37	lung 28	-12.12
lung 23 KC	COPD	30.52	159.17	159.17	lung 23	-38.94
lung 25 KC	normal	32.15	57.91	57.91	lung 25	
asthmatic lung ODO3112	29321	23.19	15086.65	15086.65	asthmatic lung	2.43
asthmatic lung ODO3433	29323	24.76	5706.9	11413.80	asthmatic lung	1.84
asthmatic lung ODO3397	29322	21.71	37760.01	75520.02	asthmatic lung	12.18
asthmatic lung ODO4928	29325	24.16	8255.16	16510.32	asthmatic lung	2.66
endo cells KC	control	37.31	2.36	2.36	endo cells	
endo VEGF KC		40	0	0.00	endo VEGF	-2.36
endo bFGF KC		35.67	6.54	6.54	endo bFGF	2.77
heart Clontech	normal	26.32	2170.24	4340.48	heart	
heart (T-1) ischemic	29417	25.87	2863.04	5726.08	heart T-1	1.32
heart (T-14) non- obstructive DCM	29422	24.62	6200.03	12400.06	heart T-14	2.86
heart (T-3399) DCM	29426	24.06	8775.18	17550.36	heart T-3399	4.04
adenoid GW99-269	26162	29.2	362.88	725.76	adenoid	
tonsil GW98-280	22582	27.24	1222.33	2444.66	tonsil	
T cells PC00314	28453	28.09	723.06	1446.12	T cells	
PBMNC		30.67	145.75	145.75	PBMNC	
monocyte		28.42	587.16	1174.32	monocyte	
B cells PC00665	28455	34.17	16.57	33.14	B cells	
dendritic cells 28441		31.78	72.95	145.90	dendritic cells	
neutrophils	28440	21.46	44297.23	44297.23	neutrophils	
eosinophils	28446	22.79	19332.21	38664.42	eosinophils	
BM unstim		29.22	358.53	358.53	BM unstim	
BM stim		31.27	100.39	100.39	BM stim	-3.57
osteo dif		30.14	202.25	202.25	osteo dif	4.97
osteo undif		32.72	40.67	40.67	osteo undif	
chondrocytes		27.3	1178.3	2945.75	chondrocytes	
OA Synovium IP12/01	29462	23.33	13860.23	13860.23	OA Synovium	
OA Synovium NP10/01	29461	25.3	4080.49	8160.98	OA Synovium	
OA Synovium NP57/00	28464	25.23	4253.8	8507.60	OA Synovium	
RA Synovium NP03/01	28466	25.46	3686.62	7373.24	RA Synovium	
RA Synovium NP71/00	28467	23.31	14036.44	28072.88	RA Synovium	
RA Synovium NP45/00	28475	24.28	7658.52	15317.04	RA Synovium	
OA bone (biobank)	29217	26.48	1958.1	1958.10	OA bone (biobank)	

OA bone Sample 1	J. Emory	25.28	4131.76	8263.52	OA bone	
OA bone Sample 2	J. Emory	25.23	4242.9	8485.80	OA bone	
Cartilage (pool)	Normal	24.05	8829.67	17659.34	Cartilage (pool)	
Cartilage (pool)	OA	24.28	7685.44	15370.88	Cartilage (pool)	-1.15
PBL uninfected	28441	29.33	334.71	669.42	PBL uninfected	
PBL HIV IIIB	28442	29.59	283.96	567.92	PBL HIV IIIB	-1.18
MRC5 uninfected (100%)	29158	23.92	9595.12	19190.24	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	25.2	4341.36	8682.72	MRC5 HSV strain F	-2.21
W12 cells	29179	30.43	168.9	337.80	W12 cells	
Keratinocytes	29180	29.66	272.9	545.80	Keratinocytes	
B-actin control		27.64	956.41			
genomic		27.35	1143.39			
1.00E+05		20.14	100000			
1.00E+05		20.26	100000			
1.00E+04		23.6	10000			
1.00E+04		24.02	10000			
1.00E+03		27.49	1000			
1.00E+03		27.5	1000			
1.00E+02		31.66	100			
1.00E+02		31.01	100			
1.00E+01		40	0			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg1002620T1b

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.24
colon tumor	-2.37
colon tumor	-1.55
colon tumor	-2.97
lung tumor	-9.28
lung tumor	-2.02
lung tumor	-1.54
lung tumor	2.52
breast tumor	1.84
breast tumor	-1.43
breast tumor	2.40
breast tumor	-1.88
brain stage 5 ALZ	-2.15
brain stage 5 ALZ	-1.47
brain stage 5 ALZ	-1.86
brain stage 5 ALZ	-1.54
lung 24	-61.80
lung 28	-12.12

lung 23	-38.94
asthmatic lung	2.43
asthmatic lung	1.84
asthmatic lung	12.18
asthmatic lung	2.66
endo VEGF	-2.36
endo bFGF	2.77
heart T-1	1.32
heart T-14	2.86
heart T-3399	4.04
BM stim	-3.57
osteo dif	4.97
Cartilage (pool)	-1.15
PBL HIV IIIB	-1.18
MRC5 HSV strain F	-2.21

Gene Name sbg102200MCTa

- 5 Moderate to low overall expression. Highest normal expression in the subcutaneous adipose tissue, whole brain, fetal brain, cerebellum, and fetal liver. Highest disease expression in 2 of 4 lung tumor samples, one of the normal lung samples, one of the normal breast samples, and the CT lung sample. Downregulation in 1 of 4 breast cancer samples implicates this gene in cancer of the breast.
- 10 Downregulation in 3 of 3 COPD lung samples suggests involvement in chronic obstructive pulmonary disease. Moderate expression in the OA and RA synovium as well as the PBLs, adenoid, tonsil, T cells, B cells, and the chondrocytes indicates involvement in osteoarthritis and rheumatoid arthritis.

Sample sbg102200MCTa	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	36.01, 34.76	3.83	8.04	5.94	3.06	16.34	96.98
Subcutaneous Adipose Zenbio	34.85, 33.96	7.63	12.94	10.29	0.96	52.36	538.48
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	26.05, 26.18	1434.25	1331.2	1382.73	7.24	6.91	9549.21
Fetal Brain Clontech	40, 34.46	0	9.63	4.82	0.48	103.95	500.52
Cerebellum Clontech	31.7, 32.73	49.65	26.9	38.28	2.17	23.04	881.91
Cervix	40, 40	0	0	0.00	2.42	20.66	0.00
Colon	38.55, 38.57	0.84	0.83	0.84	2.71	18.45	15.41
Endometrium	40, 40	0	0	0.00	0.73	68.21	0.00
Esophagus	35.23, 40	6.09	0	3.05	1.37	36.50	111.13
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	39.8, 40	0.4	0	0.20	0.32	155.28	31.06
Ileum	34.16, 40	11.53	0	5.77	2.58	19.38	111.72
Jejunum	32.82, 33.18	25.46	20.6	23.03	6.60	7.58	174.47
Kidney	34.23, 34.1	11.02	11.9	11.46	2.12	23.58	270.28
Liver	35.35, 37.28	5.65	1.79	3.72	1.50	33.33	124.00
Fetal Liver Clontech	29.45, 28.98	189.89	250.96	220.43	10.40	4.81	1059.74

Lung	34.99, 33.43	7.04	17.81	12.43	2.57	19.46	241.73
Mammary Gland Clontech	31.76, 31.05	48.02	73.18	60.60	13.00	3.85	233.08
Myometrium	34.46, 35.22	9.64	6.12	7.88	2.34	21.37	168.38
Omentum	37.94, 34.13	1.21	11.71	6.46	3.94	12.69	81.98
Ovary	34.03, 33.43	12.44	17.77	15.11	4.34	11.52	174.02
Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	32.56, 31.81	29.88	46.65	38.27	5.48	9.12	349.13
Placenta Clontech	40, 40	0	0	0.00	5.26	9.51	0.00
Prostate	40, 36.21	0	3.39	1.70	3.00	16.67	28.25
Rectum	40, 39.37	0	0.52	0.26	1.23	40.65	10.57
Salivary Gland Clontech	30.6, 31.77	95.89	47.76	71.83	7.31	6.84	491.28
Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	34.47, 35.32	9.58	5.75	7.67	1.21	41.32	316.74
Small Intestine Clontech	40, 40	0	0	0.00	0.98	51.07	0.00
Spleen	34.1, 36.49	11.93	2.87	7.40	4.92	10.16	75.20
Stomach	35.17, 36.07	6.3	3.68	4.99	2.73	18.32	91.39
Testis Clontech	37.98, 40	1.19	0	0.60	0.57	87.87	52.28
Thymus Clontech	31.28, 30.4	63.69	108.05	85.87	9.89	5.06	434.13
Thyroid	33.08, 32.96	21.88	23.47	22.68	2.77	18.05	409.30
Trachea Clontech	32.54, 31.34	30.14	61.71	45.93	9.71	5.15	236.48
Urinary Bladder	33.91, 40	13.32	0	6.66	5.47	9.14	60.88
Uterus	33.71, 32.43	15.04	32.13	23.59	5.34	9.36	220.83
genomic	26.3	1237.42					
b-actin	27.49	610.72					
1.00E+05	19.18	100000					
1.00E+05	19.45	100000					
1.00E+04	22.6	10000					
1.00E+04	22.53	10000					
1.00E+03	26.17	1000					
1.00E+03	26.19	1000					
1.00E+02	30.61	100					
1.00E+02	30.53	100					
1.00E+01	40	0					
1.00E+01	34.91	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg102200MCTa	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte	Sample	Fold Change in Disease Populatio
-------------------------	--------------------------------------	----	-----------------------	---------------------------------	--------	---

)			d/50 ng total RNA		n
colon normal GW98-167	21941	28.58	519.72	1039.44	colon normal	
colon tumor GW98-166	21940	30.18	202.86	405.72	colon tumor	-2.56
colon normal GW98-178	22080	31.39	100.15	200.30	colon normal	
colon tumor GW98-177	22060	29.62	282.42	564.84	colon tumor	2.82
colon normal GW98-561	23514	30.36	183.13	366.26	colon normal	
colon tumor GW98-560	23513	30.45	173.87	347.74	colon tumor	-1.05
colon normal GW98-894	24691	30.23	196.98	393.96	colon normal	
colon tumor GW98-893	24690	30.35	183.76	367.52	colon tumor	-1.07
lung normal GW98-3	20742	26.68	1575.72	3151.44	lung normal	
lung tumor GW98-2	20741	28.8	456.47	912.94	lung tumor	-3.45
lung normal GW97-179	20677	27.94	754.47	1508.94	lung normal	
lung tumor GW97-178	20676	26.27	2002.28	4004.56	lung tumor	2.65
lung normal GW98-165	21922	26.87	1411.09	2822.18	lung normal	
lung tumor GW98-164	21921	29.38	325.51	651.02	lung tumor	-4.34
lung normal GW98-282	22584	30	225.32	450.64	lung normal	
lung tumor GW98-281	22583	28.64	502.02	1004.04	lung tumor	2.23
breast normal GW00-392	28750	28.32	602.59	602.59	breast normal	
breast tumor GW00-391	28746	28.05	709.37	1418.74	breast tumor	2.35
breast normal GW00-413	28798	29.56	292.43	292.43	breast normal	
breast tumor GW00-412	28797	30.05	218.89	437.78	breast tumor	1.50
breast normal GW00-235:238	27592-95	30.96	128.91	128.91	breast normal	
breast tumor GW00-231:234	27588-91	30.57	161.3	161.30	breast tumor	1.25
breast normal GW98-621	23656	27.04	1275.81	2551.62	breast normal	
breast tumor GW98-620	23655	31.35	102.26	204.52	breast tumor	-12.48
brain normal BB99-542	25507	28.44	564.32	1128.64	brain normal	
brain normal BB99-406	25509	29.01	402.37	804.74	brain normal	
brain normal BB99-904	25546	29.67	274.03	548.06	brain normal	
brain stage 5 ALZ BB99-874	25502	29.6	284.82	569.64	brain stage 5 ALZ	-1.45
brain stage 5 ALZ BB99-887	25503	27.92	765.16	1530.32	brain stage 5 ALZ	1.85
brain stage 5 ALZ BB99-862	25504	28.74	472.27	944.54	brain stage 5 ALZ	1.14
brain stage 5 ALZ BB99-927	25542	29.3	340.25	680.50	brain stage 5 ALZ	-1.22
CT lung KC	normal	26.69	1569.87	3139.74	CT lung	
lung 26 KC	normal	31.07	120.9	120.90	lung 26	
lung 27 KC	normal	31.17	113.69	113.69	lung 27	
lung 24 KC	COPD	31.8	78.78	78.78	lung 24	-10.98
lung 28 KC	COPD	32.79	44.02	44.02	lung 28	-19.65
lung 23 KC	COPD	31.35	102.33	102.33	lung 23	-8.45
lung 25 KC	normal	31.66	85.57	85.57	lung 25	
asthmatic lung ODO3112	29321	28.76	467.45	467.45	asthmatic lung	-1.85
asthmatic lung ODO3433	29323	27.73	851.21	1702.42	asthmatic lung	1.97
asthmatic lung ODO3397	29322	27.81	812.68	1625.36	asthmatic lung	1.88

asthmatic lung ODO4928	29325	29.42	317.12	634.24	asthmatic lung	-1.36
endo cells KC	control	33.06	37.57	37.57	endo cells	
endo VEGF KC		33.9	22.97	22.97	endo VEGF	-1.64
endo bFGF KC		33.13	36.03	36.03	endo bFGF	-1.04
heart Clontech	normal	31.1	118.18	236.36	heart	
heart (T-1) ischemic	29417	31.16	114.67	229.34	heart T-1	-1.03
heart (T-14) non-obstructive DCM	29422	30.52	166.47	332.94	heart T-14	1.41
heart (T-3399) DCM	29426	30.14	208.3	416.60	heart T-3399	1.76
adenoid GW99-269	26162	29.07	388.9	777.80	adenoid	
tonsil GW98-280	22582	28.29	614.82	1229.64	tonsil	
T cells PC00314	28453	29.78	256.1	512.20	T cells	
PBMNC		33.73	25.44	25.44	PBMNC	
monocyte		33.52	28.71	57.42	monocyte	
B cells PC00665	28455	28.66	495.36	990.72	B cells	
dendritic cells 28441		30.81	140.17	280.34	dendritic cells	
neutrophils	28440	30.17	204.92	204.92	neutrophils	
eosinophils	28446	34.19	19.39	38.78	eosinophils	
BM unstim		35.9	7.11	7.11	BM unstim	
BM stim		35.77	7.7	7.70	BM stim	1.08
osteo dif		34.98	12.18	12.18	osteo dif	2.55
osteo undif		36.59	4.77	4.77	osteo undif	
chondrocytes		32.91	41.03	102.58	chondrocytes	
OA Synovium IP12/01	29462	29.16	370.33	370.33	OA Synovium	
OA Synovium NP10/01	29461	30.69	151.13	302.26	OA Synovium	
OA Synovium NP57/00	28464	29.51	301.55	603.10	OA Synovium	
RA Synovium NP03/01	28466	30.36	183.35	366.70	RA Synovium	
RA Synovium NP71/00	28467	29.27	346.61	693.22	RA Synovium	
RA Synovium NP45/00	28475	29.13	376.88	753.76	RA Synovium	
OA bone (biobank)	29217	30.47	171.6	171.60	OA bone (biobank)	
OA bone Sample 1	J. Emory	30.05	219.19	438.38	OA bone	
OA bone Sample 2	J. Emory	31.13	116.62	233.24	OA bone	
Cartilage (pool)	Normal	30.65	154.56	309.12	Cartilage (pool)	
Cartilage (pool)	OA	32.01	69.39	138.78	Cartilage (pool)	-2.23
PBL uninfected	28441	27.91	769.91	1539.82	PBL uninfected	
PBL HIV IIIB	28442	28.14	672.12	1344.24	PBL HIV IIIB	-1.15
MRC5 uninfected (100%)	29158	31.66	85.38	170.76	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	30.08	214.88	429.76	MRC5 HSV strain F	2.52
W12 cells	29179	33.33	32.15	64.30	W12 cells	
Keratinocytes	29180	30.64	155.16	310.32	Keratinocytes	
B-actin control		27.55	946.64			
genomic		26.82	1451.22			
1.00E+05		19.71	100000			
1.00E+05		19.95	100000			
1.00E+04		23.43	10000			
1.00E+04		23.38	10000			

1.00E+03		26.88	1000			
1.00E+03		26.8	1000			
1.00E+02		31.99	100			
1.00E+02		32.15	100			
1.00E+01		34.99	10			
1.00E+01		40	0			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg102200MCTa

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-2.56
colon tumor	2.82
colon tumor	-1.05
colon tumor	-1.07
lung tumor	-3.45
lung tumor	2.65
lung tumor	-4.34
lung tumor	2.23
breast tumor	2.35
breast tumor	1.50
breast tumor	1.25
breast tumor	-12.48
brain stage 5 ALZ	-1.45
brain stage 5 ALZ	1.85
brain stage 5 ALZ	1.14
brain stage 5 ALZ	-1.22
lung 24	-10.98
lung 28	-19.65
lung 23	-8.45
asthmatic lung	-1.85
asthmatic lung	1.97
asthmatic lung	1.88
asthmatic lung	-1.36
endo VEGF	-1.64
endo bFGF	-1.04
heart T-1	-1.03
heart T-14	1.41
heart T-3399	1.76
BM stim	1.08
osteo dif	2.55
Cartilage (pool)	-2.23
PBL HIV IIIB	-1.15
MRC5 HSV strain F	2.52

Gene Name sbg102200MCTb

High to moderate overall expression. Highest normal expression in the whole brain, liver, fetal liver, and thymus. Highest disease expression in one of the colon normal/tumor pairs, one of the lung normal/tumor pairs, one of the asthmatic lung samples, the dendritic cells, and the uninfected and HIV-infected PBL cells. Upregulation in 2 of 4 breast tumor samples is sufficient to make a disease claim in cancer of the breast. Upregulation in 1 of 4 AD brain samples indicates a potential role in Alzheimer's disease. Downregulation in 3 of 3 COPD lung samples suggests involvement in chronic obstructive pulmonary disease. Upregulation in 1 of 4 asthmatic lung samples indicates a potential role for this gene in lung cancer. High expression in all of the immune cells. Also high to moderate expression in the OA and RA synovium samples, the OA bone samples, and in the chondrocytes suggests an involvement in osteoarthritis and rheumatoid arthritis.

Sample sbg102200MCTb	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	35.66, 34.05	3.76	10.2	6.98	3.06	16.34	114.05
Subcutaneous Adipose Zenbio	40, 36	0.17	3.07	1.62	0.96	52.36	84.82
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	26.32, 26.41	1192.66	1124.69	1158.68	7.24	6.91	8001.90
Fetal Brain Clontech	40, 35.84	0	3.38	1.69	0.48	103.95	175.68
Cerebellum Clontech	34.51, 34.28	7.68	8.8	8.24	2.17	23.04	189.86
Cervix	40, 34.34	3.17	8.5	5.84	2.42	20.66	120.56
Colon	33.67, 35.6	12.86	3.91	8.39	2.71	18.45	154.70
Endometrium	35.32, 34.43	4.66	8.05	6.36	0.73	68.21	433.49
Esophagus	34.27, 35.14	8.86	5.19	7.03	1.37	36.50	256.39
Heart Clontech	40, 35.05	0	5.5	2.75	1.32	37.88	104.17
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	35.29, 33.68	4.74	12.8	8.77	2.58	19.38	169.96
Jejunum	31.23, 30.98	57.65	67.22	62.44	6.60	7.58	472.99
Kidney	34.67, 34.21	6.95	9.2	8.08	2.12	23.58	190.45
Liver	30.76, 30.65	77.12	82.56	79.84	1.50	33.33	2661.33
Fetal Liver Clontech	26.8, 27.1	885.14	734.31	809.73	10.40	4.81	3892.91
Lung	40, 40	0	0.17	0.09	2.57	19.46	1.65
Mammary Gland Clontech	31.28, 31.37	56.1	52.95	54.53	13.00	3.85	209.71
Myometrium	34.16, 36.28	9.48	2.57	6.03	2.34	21.37	128.74
Omentum	34.18, 33.42	9.38	15	12.19	3.94	12.69	154.70
Ovary	34.21, 34.18	9.24	9.39	9.32	4.34	11.52	107.32
Pancreas	40, 40	0	0.14	0.07	0.81	61.80	4.33
Head of Pancreas	40, 35.02	0	5.59	2.80	1.57	31.85	89.01
Parotid Gland	31.23, 31.9	57.68	38.33	48.01	5.48	9.12	438.00
Placenta Clontech	31.77, 33.13	41.33	17.94	29.64	5.26	9.51	281.70
Prostate	39.72, 35.03	0.31	5.56	2.94	3.00	16.67	48.92
Rectum	35.36, 34.34	4.53	8.5	6.52	1.23	40.65	264.84
Salivary Gland Clontech	30.52, 30.54	89.5	88.43	88.97	7.31	6.84	608.52

Skeletal Muscle Clontech	40, 40	0	0	0.00	1.26	39.68	0.00
Skin	40, 40	0	0	0.00	1.21	41.32	0.00
Small Intestine Clontech	40, 39.27	0	0.41	0.21	0.98	51.07	10.47
Spleen	34.21, 33.54	9.2	13.91	11.56	4.92	10.16	117.43
Stomach	35.05, 33.62	5.51	13.22	9.37	2.73	18.32	171.52
Testis Clontech	40, 40	0	0	0.00	0.57	87.87	0.00
Thymus Clontech	28.56, 28.44	299.45	322.02	310.74	9.89	5.06	1570.96
Thyroid	31.65, 32.3	44.76	29.81	37.29	2.77	18.05	673.01
Trachea Clontech	32.3, 31.9	29.9	38.28	34.09	9.71	5.15	175.54
Urinary Bladder	34.34, 35.02	8.49	5.59	7.04	5.47	9.14	64.35
Uterus	33.07, 34.56	18.62	7.45	13.04	5.34	9.36	122.05
genomic	25.84	1597.08					
b-actin	27.32	643.56					
1.00E+05	19.22	100000					
1.00E+05	19.33	100000					
1.00E+04	22.48	10000					
1.00E+04	22.95	10000					
1.00E+03	26.19	1000					
1.00E+03	26.37	1000					
1.00E+02	31.23	100					
1.00E+02	30.48	100					
1.00E+01	32.76	10					
1.00E+01	35.02	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample sbg102200MCTb	Reg number (GSK identifie r)	Ct	Mean GOI copies	copies of mRNA detected /50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	26.48	1723.59	3447.18	colon normal	
colon tumor GW98-166	21940	26.06	2195.04	4390.08	colon tumor	1.27
colon normal GW98-178	22080	29.03	389.88	779.76	colon normal	
colon tumor GW98-177	22060	27.39	1015.65	2031.30	colon tumor	2.61
colon normal GW98-561	23514	26.74	1478.76	2957.52	colon normal	
colon tumor GW98-560	23513	26.37	1831.8	3663.60	colon tumor	1.24
colon normal GW98-894	24691	25.58	2918.02	5836.04	colon normal	
colon tumor GW98-893	24690	25	4089.75	8179.50	colon tumor	1.40
lung normal GW98-3	20742	24.59	5183.31	10366.62	lung normal	
lung tumor GW98-2	20741	24.94	4232.23	8464.46	lung tumor	-1.22
lung normal GW97-179	20677	25.73	2672.73	5345.46	lung normal	
lung tumor GW97-178	20676	25.36	3307.37	6614.74	lung tumor	1.24
lung normal GW98-165	21922	26.13	2109.28	4218.56	lung normal	

lung tumor GW98-164	21921	25.54	2973.82	5947.64	lung tumor	1.41
lung normal GW98-282	22584	27.08	1212.64	2425.28	lung normal	
lung tumor GW98-281	22583	27.45	979.82	1959.64	lung tumor	-1.24
breast normal GW00-392	28750	26.68	1536.57	1536.57	breast normal	
breast tumor GW00-391	28746	26.58	1626.58	3253.16	breast tumor	2.12
breast normal GW00-413	28798	31.71	81.9	81.90	breast normal	
breast tumor GW00-412	28797	26.57	1632	3264.00	breast tumor	39.85
breast normal GW00-235:238	27592-95	32.52	51.1	51.10	breast normal	
breast tumor GW00-231:234	27588-91	29.67	268.7	268.70	breast tumor	5.26
breast normal GW98-621	23656	26.48	1727.44	3454.88	breast normal	
breast tumor GW98-620	23655	25.65	2793.6	5587.20	breast tumor	1.62
brain normal BB99-542	25507	28.62	494	988.00	brain normal	
brain normal BB99-406	25509	29.45	304.68	609.36	brain normal	
brain normal BB99-904	25546	30.08	211.25	422.50	brain normal	
brain stage 5 ALZ BB99-874	25502	28.75	458.64	917.28	brain stage 5 ALZ	1.36
brain stage 5 ALZ BB99-887	25503	26.86	1383.71	2767.42	brain stage 5 ALZ	4.11
brain stage 5 ALZ BB99-862	25504	28.02	702.59	1405.18	brain stage 5 ALZ	2.09
brain stage 5 ALZ BB99-927	25542	29.57	284.31	568.62	brain stage 5 ALZ	-1.18
CT lung KC	normal	26.58	1624.29	3248.58	CT lung	
lung 26 KC	normal	34.19	19.27	19.27	lung 26	
lung 27 KC	normal	32.45	53.23	53.23	lung 27	
lung 24 KC	COPD	33	38.6	38.60	lung 24	-21.75
lung 28 KC	COPD	32.24	59.95	59.95	lung 28	-14.01
lung 23 KC	COPD	32.87	41.63	41.63	lung 23	-20.17
lung 25 KC	normal	33.04	37.52	37.52	lung 25	
asthmatic lung ODO3112	29321	30.13	205.46	205.46	asthmatic lung	-4.09
asthmatic lung ODO3433	29323	27.82	788.82	1577.64	asthmatic lung	1.88
asthmatic lung ODO3397	29322	25.17	3695.43	7390.86	asthmatic lung	8.80
asthmatic lung ODO4928	29325	27.6	894.3	1788.60	asthmatic lung	2.13
endo cells KC	control	28.2	633.43	633.43	endo cells	
endo VEGF KC		28.86	429.51	429.51	endo VEGF	-1.47
endo bFGF KC		28.97	403.08	403.08	endo bFGF	-1.57
heart Clontech	normal	28.83	437.62	875.24	heart	
heart (T-1) ischemic	29417	28.42	557.54	1115.08	heart T-1	1.27
heart (T-14) non-obstructive DCM	29422	27.72	835.11	1670.22	heart T-14	1.91
heart (T-3399) DCM	29426	28.63	493.01	986.02	heart T-3399	1.13
adenoid GW99-269	26162	27	1269.75	2539.50	adenoid	
tonsil GW98-280	22582	26.33	1876.29	3752.58	tonsil	
T cells PC00314	28453	29.15	363.35	726.70	T cells	
PBMNC		33.05	37.41	37.41	PBMNC	
monocyte		31.49	92.84	185.68	monocyte	
B cells PC00665	28455	26.5	1700.87	3401.74	B cells	
dendritic cells 28441		24.2	6511.17	13022.34	dendritic cells	

neutrophils	28440	27.01	1262.74	1262.74	neutrophils	
eosinophils	28446	29.23	347.08	694.16	eosinophils	
BM unstim		30.85	135.01	135.01	BM unstim	
BM stim		28.68	478.5	478.50	BM stim	3.54
osteo dif		31.03	121.2	121.20	osteo dif	3.93
osteo undif		33.38	30.85	30.85	osteo undif	
chondrocytes		26.63	1579.73	3949.33	chondrocytes	
OA Synovium IP12/01	29462	29.11	371.98	371.98	OA Synovium	
OA Synovium NP10/01	29461	29.45	304.55	609.10	OA Synovium	
OA Synovium NP57/00	28464	27.83	784.87	1569.74	OA Synovium	
RA Synovium NP03/01	28466	27.31	1063.77	2127.54	RA Synovium	
RA Synovium NP71/00	28467	27.08	1217.21	2434.42	RA Synovium	
RA Synovium NP45/00	28475	26.6	1606.41	3212.82	RA Synovium	
OA bone (biobank)	29217	28.65	485.63	485.63	OA bone (biobank)	
OA bone Sample 1	J. Emory	28.78	451.74	903.48	OA bone	
OA bone Sample 2	J. Emory	28.27	607.15	1214.30	OA bone	
Cartilage (pool)	Normal	29.42	310.76	621.52	Cartilage (pool)	
Cartilage (pool)	OA	30.09	209.7	419.40	Cartilage (pool)	-1.48
PBL uninfected	28441	23.85	7997.03	15994.06	PBL uninfected	
PBL HIV IIIB	28442	24.85	4447.34	8894.68	PBL HIV IIIB	-1.80
MRC5 uninfected (100%)	29158	27.02	1258.46	2516.92	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	29.6	278.84	557.68	MRC5 HSV strain F	-4.51
W12 cells	29179	27.21	1122.77	2245.54	W12 cells	
Keratinocytes	29180	25.64	2815.12	5630.24	Keratinocytes	
B-actin control		27.78	807.72			
genomic		27.04	1246.22			
1.00E+05		19.69	100000			
1.00E+05		20.01	100000			
1.00E+04		23.15	10000			
1.00E+04		23.2	10000			
1.00E+03		27.02	1000			
1.00E+03		26.76	1000			
1.00E+02		31.45	100			
1.00E+02		32.39	100			
1.00E+01		35.72	10			
1.00E+01		34.74	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			

Gene Name sbg102200MCTb

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.27
colon tumor	2.61
colon tumor	1.24

colon tumor	1.40
lung tumor	-1.22
lung tumor	1.24
lung tumor	1.41
lung tumor	-1.24
breast tumor	2.12
breast tumor	39.85
breast tumor	5.26
breast tumor	1.62
brain stage 5 ALZ	1.36
brain stage 5 ALZ	4.11
brain stage 5 ALZ	2.09
brain stage 5 ALZ	-1.18
lung 24	-21.75
lung 28	-14.01
lung 23	-20.17
asthmatic lung	-4.09
asthmatic lung	1.88
asthmatic lung	8.80
asthmatic lung	2.13
endo VEGF	-1.47
endo bFGF	-1.57
heart T-1	1.27
heart T-14	1.01
heart T-3399	1.15
BM stim	3.54
osteo dif	3.93
Cartilage (pool)	-1.48
PBL HIV IIIB	-1.80
MRC5 HSV strain F	-4.51

Gene Name sbg1020380LYG

Failed

5

Gene Name sbg1007026SGLT

Good to moderate overall expression. The highest normal expression is seen in the whole brain, cerebellum, hypothalamus, jejunum, fetal liver, rectum, and uterus. This gene shows system specific expression in samples representing the central nervous system, the female reproductive organs, and the GI tract. The expression seen in the disease samples confirms that seen in the normal samples with the highest levels of expression seen in the normal and Alzheimer's brain samples.

10

Upregulation in 1 of 4 colon tumor samples and 2 of 4 breast tumor samples as well as downregulation in 1 of 4 lung tumors poses a potential role for this gene in cancers of the colon and breast. Downregulation in 2 of 4 Alzheimer's brain samples implies involvement in Alzheimer's disease. Downregulation in 3 of 3 COPD samples and upregulation in 2 of 4 asthmatic lung samples suggests a potential role for this gene in chronic obstructive pulmonary disorder. Upregulation in the VEGF-treated endothelial cell line implicates a possible role for this gene in angiogenesis.

15

Downregulated in the stimulated bone marrow sample. High expression in the RA and OA synovium samples, the OA bone samples, and the chondrocytes with corroborating high expression in the T cells, B cells, neutrophils, and eosinophils implicates this gene in osteoarthritis and rheumatoid arthritis.

20

Sample	Ct (sample	Mean	Mean	Average	18S	50	copies of
sbg1007026SGLT	1 and 2)	GOI	GOI	GOI	rRNA	ng/18	mRNA

		copies (sample 1)	copies (sample 2)	Copies	(ng)	S rRNA (ng)	detected/ 50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0	0	0.00	3.06	16.34	0.00
Subcutaneous Adipose Zenbio	40, 40	0	0.1	0.05	0.96	52.36	2.62
Adrenal Gland Clontech	40, 38.76	0	0.31	0.16	0.61	81.97	12.70
Whole Brain Clontech	23.01, 22.63	3438.45	4301.69	3870.07	7.24	6.91	26727.00
Fetal Brain Clontech	35.91, 39.16	1.66	0.24	0.95	0.48	107.95	98.75
Cerebellum Clontech	34.55, 32.7	3.71	11.08	7.40	2.17	23.04	170.39
Cervix	34.21, 34.61	4.54	3.58	4.06	2.47	20.66	83.88
Colon	33.44, 33.7	7.16	6.14	6.65	2.71	18.45	122.69
Endometrium	34.88, 40	3.05	0.1	1.58	0.73	68.21	107.44
Esophagus	40, 40	0	0.1	0.09	1.37	36.50	1.82
Heart Clontech	39.63, 39.53	0.18	0.19	0.19	1.32	37.88	7.01
Hypothalamus	40, 35.34	0	2.33	1.17	0.32	155.28	180.90
Ileum	40, 40	0	0	0.00	2.58	19.38	0.00
Jejunum	30.1, 30.34	51.59	44.92	48.26	6.60	7.58	365.57
Kidney	33.49, 40	6.96	0	3.48	2.12	23.58	82.08
Liver	40, 33.7	0	6.15	3.08	1.50	33.33	102.50
Fetal Liver Clontech	29.58, 39.41	70.26	77.58	73.92	10.40	4.81	355.38
Lung	35.51, 37.83	1.98	0.53	1.26	2.57	19.46	24.42
Mammary Gland Clontech	35.55, 34.04	9.02	5.03	7.03	13.00	3.85	27.02
Myometrium	33.63, 34.13	6.38	4.77	5.58	2.34	21.37	119.12
Omentum	40, 40	0	0	0.00	3.94	12.69	0.00
Ovary	35.38, 37.6	2.27	0.61	1.44	4.34	11.52	16.59
Pancreas	40, 37.1	0	0.82	0.41	0.81	61.80	25.34
Head of Pancreas	35.45, 36.72	2.18	1.03	1.61	1.57	31.85	51.11
Parotid Gland	36.88, 40	0.94	0	0.47	5.48	9.12	4.29
Placenta Clontech	33.84, 38.46	5.66	0.37	3.02	5.26	9.51	28.66
Prostate	38.76, 37.12	0.31	0.81	0.56	3.00	16.67	9.33
Rectum	36.18, 33.82	1.42	5.7	3.56	1.23	40.65	144.72
Salivary Gland Clontech	38.36, 39.93	0.39	0.12	0.26	7.31	6.84	1.74
Skeletal Muscle Clontech	35.69, 36.23	1.9	1.38	1.64	1.26	39.68	65.08
Skin	39.51, 40	0.2	0.09	0.15	1.21	41.32	5.99
Small Intestine Clontech	40, 36.04	0.1	1.53	0.82	0.98	51.07	41.62
Spleen	33.51, 38.51	6.87	0.36	3.62	4.92	10.16	36.74
Stomach	34.14, 34.19	4.73	4.59	4.66	2.73	18.32	85.35
Testis Clontech	35.81, 40	1.76	0.11	0.94	0.57	87.87	82.16
Thymus Clontech	33.26, 32.49	7.96	12.55	10.26	9.89	5.06	51.85
Thyroid	40, 39.9	0.08	0.16	0.12	2.77	18.05	2.17
Trachea Clontech	34.25, 33.8	4.42	5.77	5.10	9.71	5.15	26.24
Urinary Bladder	39.95, 36.54	0.1	1.14	0.62	5.47	9.14	5.67
Uterus	33, 31.23	9.3	26.52	17.91	5.34	9.36	167.70
genomic	24.72	1251.19					

b-actin	25.89	625.04					
1.00E+05	17.54	100000					
1.00E+05	17.65	100000					
1.00E+04	21.03	10000					
1.00E+04	20.92	10000					
1.00E+03	24.87	1000					
1.00E+03	24.96	1000					
1.00E+02	29.1	100					
1.00E+02	29.04	100					
1.00E+01	32.05	10					
1.00E+01	33.51	10					
1.00E-00	36.41	1					
1.00E-00	37.41	1					
NTC	40	0					
NTC	40	-1					

Sample sbg1007026SGLT	Reg. number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detected/ 50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	29.22	127.1	254.20	colon normal	
colon tumor GW98-166	21940	31.07	44.11	88.22	colon tumor	-2.88
colon normal GW98-178	22080	38.41	0.65	1.30	colon normal	
colon tumor GW98-177	22060	31.17	41.5	83.00	colon tumor	63.85
colon normal GW98-561	23514	31.21	40.69	81.38	colon normal	
colon tumor GW98-560	23513	33.06	14.04	28.08	colon tumor	-2.90
colon normal GW98-894	24691	29.63	100.41	200.82	colon normal	
colon tumor GW98-893	24690	32.22	22.7	45.40	colon tumor	-4.42
lung normal GW98-3	20742	29.8	91.46	182.92	lung normal	
lung tumor GW98-2	20741	34.26	7.02	14.04	lung tumor	-13.03
lung normal GW97-179	20677	29.59	103.13	206.26	lung normal	
lung tumor GW97-178	20676	29.84	89.09	178.18	lung tumor	-1.16
lung normal GW98-165	21922	29.6	102.46	204.92	lung normal	
lung tumor GW98-164	21921	30.8	51.53	103.06	lung tumor	-1.99
lung normal GW98-282	22584	32.53	18.97	37.94	lung normal	
lung tumor GW98-281	22583	32.29	21.8	43.60	lung tumor	1.15
breast normal GW00-392	28750	28.77	164.85	164.85	breast normal	
breast tumor GW00-391	28746	30.64	56.21	112.42	breast tumor	-1.47
breast normal GW00-413	28798	34.49	6.17	6.17	breast normal	
breast tumor GW00-412	28797	30.37	65.97	131.94	breast tumor	21.38
breast normal GW00-235:238	27592-95	32.87	15.66	15.66	breast normal	
breast tumor GW00-231:234	27588-91	29.8	91.07	91.07	breast tumor	5.82
breast normal GW98-621	23656	28.95	149.19	298.38	breast normal	
breast tumor GW98-620	23655	29.62	101.25	202.50	breast tumor	-1.47
brain normal BB99-542	25507	24.5	1917.28	3834.56	brain normal	

brain normal BB99-406	25509	21.35	11736.92	23473.84	brain normal	
brain normal BB99-904	25546	25.25	1248.68	2497.36	brain normal	
brain stage 5 ALZ BB99-874	25502	27.29	386.81	773.62	brain stage 5 ALZ	-12.84
brain stage 5 ALZ BB99-887	25503	23.61	3196.37	6392.74	brain stage 5 ALZ	-1.55
brain stage 5 ALZ BB99-862	25504	25.56	1045.09	2090.18	brain stage 5 ALZ	-4.75
brain stage 5 ALZ BB99-927	25542	24.45	1976.24	3952.48	brain stage 5 ALZ	-2.51
CT lung	normal	31.07	44.03	88.06	CT lung Nml	
lung 26	normal	24.93	1496.87		lung 26 Nml	
lung 27	normal	34.06	7.92	7.92	lung 27 Nml	
lung 24	COPD	34.58	5.87	5.87	lung 24 COPD	-5.45
lung 28	COPD	40	0	0.00	lung 28 COPD	-31.99
lung 23	COPD	40	0	0.00	lung 23 COPD	-31.99
lung 25	normal	40	0	0.00	lung 25 Nml	
asthmatic lung ODO3112	29321	33.19	13.04	13.04	asthmatic lung	-2.45
asthmatic lung ODO3433	29323	30.61	57.38	114.76	asthmatic lung	3.59
asthmatic lung ODO3397	29322	29.2	129.16	258.32	asthmatic lung	8.07
asthmatic lung ODO4928	29325	30.32	67.67	135.34	asthmatic lung	4.23
endo cells	control	35.09	4.37	4.37	endo cells	
endo VEGF		32.22	22.7	22.70	endo VEGF	5.19
endo bFGF		33.23	12.7	12.70	endo bFGF	2.91
heart Clontech	normal	33.53	10.71	21.42	heart	
heart (T-1) ischemic	29417	33.43	11.37	22.74	heart (T-1) ischemic	1.06
heart (T-14) non-obstructive DCM	29422	34.45	6.32	12.64	heart (T-14) non-obstructive DCM	-1.69
heart (T-3399) DCM	29426	31.98	26.02	52.04	heart (T-3399) DCM	2.43
adenoid GW99-269	26162	29.56	104.93	209.86	adenoid	
tonsil GW98-280	22582	29	144.55	289.10	tonsil	
T cells PC00314	28453	32.03	25.34	50.68	T cells	
PBMNC		37.71	0.97	0.97	PBMNC	
monocyte		37.49	1.1	2.20	monocyte	
B cells PC00665	28455	27.18	410.49	820.98	B cells	
dendritic cells	28441	33.7	9.73	19.46	dendritic cells	
neutrophils	28440	32.48	19.6	19.60	neutrophils	
eosinophils	28446	32.44	20.08	40.16	eosinophils	
BM unstim		33.8	9.17	9.17	BM unstim	
BM stim	treated	38.89	0.49	0.49	BM stim	-18.71
osteo dif	treated	37.26	1.26	1.26	osteo dif	1.26
osteo undif		40	0	0.00	osteo undif	
chondrocytes		32.07	24.82	62.05	chondrocytes	
OA Synovium IP12/01	29462	30.31	68.26	68.26	OA Synovium	
OA Synovium NP10/01	29461	30.74	53.26	106.52	OA Synovium	
OA Synovium NP57/00	28464	31.3	38.48	76.96	OA Synovium	
RA Synovium NP03/01	28466	31.08	43.89	87.78	RA Synovium	
RA Synovium NP71/00	28467	31.35	37.58	75.16	RA Synovium	

RA Synovium NP45/00	28475	30.74	53.21	106.42	RA Synovium	
OA bone (biobank)	29217	30.47	61.99	61.99	OA bone (biobank)	
OA bone Sample 1	J. Emory	29.92	85.09	170.18	OA bone	
OA bone Sample 2	J. Emory	30.91	48.27	96.54	OA bone	
Cartilage (pool)	Normal	31.34	37.68	75.36	Nml Cartilage (pool)	
Cartilage (pool)	OA	31.72	30.35	60.70	OA Cartilage (pool)	-1.24
PBL uninfected	28441	30.8	51.54	103.08	PBL uninfected	
PBL HIV IIIB	28442	32.03	25.38	50.76	PBL HIV IIIB	-2.03
MRC5 uninfected (100%)	29158	32.29	21.85	43.70	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	31.21	40.73	81.46	MRC5 HSV strain F	1.86
W12 cells	29179	33.12	13.52	27.04	W12 cells	
Keratinocytes	29180	32.35	21.06	42.12	Keratinocytes	
B-actin control		25.63	1002.01			
genomic		25.19	1290.48			
1.00E+05		17.86	100000			
1.00E+05		17.85	100000			
1.00E+04		21.44	10000			
1.00E+04		21.51	10000			
1.00E+03		25.33	1000			
1.00E+03		25.26	1000			
1.00E+02		29.62	100			
1.00E+02		30.55	100			
1.00E+01		32.93	10			
1.00E+01		33.46	10			
1.00E-00		38.18	1			
1.00E-00		40	0			
NTC		38.28	-1			
*lung 26 Normal has been omitted due to multiple amplification failures from that sample						

Gene Name sbg1007026SGLT

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-2.88
colon tumor	63.85
colon tumor	-2.90
colon tumor	-4.42
lung tumor	-13.03
lung tumor	-1.16
lung tumor	-1.99
lung tumor	1.15
breast tumor	-1.47
breast tumor	21.38

breast tumor	5.82
breast tumor	-1.47
brain stage 5 ALZ	-12.84
brain stage 5 ALZ	-1.55
brain stage 5 ALZ	-4.75
brain stage 5 ALZ	-2.51
lung 24	-5.45
lung 28	-31.99
lung 23	-31.99
asthmatic lung	-2.45
asthmatic lung	3.59
asthmatic lung	8.07
asthmatic lung	4.23
endo VEGF	5.19
endo bFGF	2.91
heart T-1	1.06
heart T-14	-1.69
heart T-3399	2.43
BM stim	-18.71
osteo dif	1.26
Cartilage (pool)	-1.24
PBL HIV IIIB	-2.03
MRC5 HSV strain F	1.86

Gene Name sbg1012732GLUT

- High to moderate overall expression. This gene is expressed fairly ubiquitously in all normal samples analyzed with highest levels of expression seen in the whole brain, fetal brain cerebellum, kidney, fetal liver, and the placenta. This gene is also expressed fairly ubiquitously in the disease samples. Downregulation in 3 of 3 COPD samples suggests a potential role for this gene in chronic obstructive pulmonary disorder. Upregulation in 3 of 3 disease heart samples implies an involvement in cardiovascular diseases such as non-obstructive and obstructive DCM and ischemia. Downregulation in the HSV-infected MRC5 cells suggests that this gene may play a role in HSV. Upregulated in the differentiated osteoblasts. High expression in the RA and OA synovium samples, the OA bone samples, and the chondrocytes with corroborating high expression in the T cells, B cells, dendritic cells, neutrophils, and eosinophils implicates this gene in osteoarthritis and rheumatoid arthritis.

Sample sbg1012732GLUT	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected/ 50 ng total RNA
Subcutaneous Adipocytes Zenbio	30.84, 30.49	46.76	57.63	52.20	3.06	16.34	852.86
Subcutaneous Adipose Zenbio	34.89, 35.19	4.31	3.62	3.97	0.96	52.36	207.59
Adrenal Gland Clontech	33.79, 32.74	8.27	15.31	11.79	0.61	81.97	966.39
Whole Brain Clontech	22.02, 21.91	8374.61	8944.05	8659.33	7.24	6.91	59802.00
Fetal Brain Clontech	32.03, 32.85	23.23	14.34	18.79	0.48	103.95	1952.70
Cerebellum Clontech	28.2, 28.26	221.12	213.07	217.10	2.17	23.04	5002.19
Cervix	32.91, 34.54	13.81	5.31	9.56	2.42	20.66	197.52
Colon	30.88, 32.48	45.58	17.87	31.73	2.71	18.45	585.33
Endometrium	36.13, 32.5	2.08	17.6	9.84	0.73	68.21	671.21

Esophagus	32.19, 33.5	21.15	9.77	15.46	1.37	36.50	564.23
Heart Clontech	31.93, 31.73	24.67	27.76	26.22	1.32	37.88	992.99
Hypothalamus	40, 32.77	0	15.04	7.52	0.32	155.28	1167.70
Ileum	30.94, 30.52	44.17	56.37	50.27	2.58	19.38	974.22
Jejunum	30.04, 29.34	75.03	113.25	94.14	6.60	7.58	713.18
Kidney	29.72, 29.18	90.58	124.19	107.39	2.12	23.58	2532.67
Liver	34.81, 32.2	4.52	21.05	12.79	1.50	33.33	426.17
Fetal Liver Clontech	26.6, 26.85	567.46	488.36	527.91	10.40	4.81	2538.03
Lung	31.61, 30.52	29.69	56.54	43.12	2.57	19.46	838.81
Mammary Gland Clontech	28.06, 27.59	239.58	316.2	277.89	13.00	3.85	1068.81
Myometrium	30.44, 29.88	59.31	82.52	70.92	2.34	21.37	1515.28
Omentum	31.7, 30.82	28.2	47.35	37.78	3.94	12.69	479.38
Ovary	30.92, 31.56	44.74	30.55	37.65	4.34	11.52	433.70
Pancreas	33.08, 32.66	12.54	16.03	14.29	0.81	61.80	882.88
Head of Pancreas	33.98, 34.1	7.36	6.89	7.13	1.57	31.85	226.91
Parotid Gland	29.5, 30.55	102.86	55.41	79.14	5.48	9.12	722.03
Placenta Clontech	25.63, 25.87	1002.18	869.55	935.87	5.26	9.51	8896.06
Prostate	30.23, 31.17	67.04	38.48	52.76	3.00	16.67	879.33
Rectum	31.29, 31.15	35.89	38.94	37.42	1.23	40.65	1520.93
Salivary Gland Clontech	28.82, 28.83	153.9	152.53	153.22	7.31	6.84	1047.98
Skeletal Muscle Clontech	33.23, 32.66	11.48	16.02	13.75	1.26	39.68	545.63
Skin	32.62, 32.57	16.46	16.96	16.71	1.21	41.32	690.50
Small Intestine Clontech	34.63, 32.82	5.03	14.62	9.83	0.98	51.07	501.79
Spleen	31.45, 32.71	32.66	15.56	24.11	4.92	10.16	245.02
Stomach	32.38, 32.43	18.93	18.41	18.67	2.73	18.32	341.94
Testis Clontech	32.32, 32.27	19.58	20.17	19.88	0.57	87.87	1746.49
Thymus Clontech	27.24, 26.75	388.32	518.55	453.44	9.89	5.06	2292.39
Thyroid	30.48, 29.44	57.86	106.5	82.18	2.77	18.05	1483.39
Trachea Clontech	29.96, 30.29	78.48	64.81	71.65	9.71	5.15	368.92
Urinary Bladder	30.59, 30.1	54.25	72.45	63.35	5.47	9.14	579.07
Uterus	30.62, 29.73	53.18	89.72	71.45	5.34	9.36	669.01
genomic	25.15	1330.24					
b-actin	26.01	800.58					
1.00E+05	18.01	100000					
1.00E+05	18.19	100000					
1.00E+04	21.35	10000					
1.00E+04	21.3	10000					
1.00E+03	25.59	1000					
1.00E+03	25.51	1000					
1.00E+02	29.95	100					
1.00E+02	29.37	100					
1.00E+01	34.05	10					
1.00E+01	33.22	10					
1.00E-00	37.19	1					
1.00E-00	40	0					
NTC	40	0					

NTC	40	0					
-----	----	---	--	--	--	--	--

Sample sbg1012732GLUT	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detected/ 50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	25.38	1695.47	3390.94	colon normal	
colon tumor GW98-166	21940	25.51	1576.91	3153.82	colon tumor	-1.08
colon normal GW98-178	22080	26.8	765.5	1531.00	colon normal	
colon tumor GW98-177	22060	25.86	1297.34	2594.68	colon tumor	1.69
colon normal GW98-561	23514	26.12	1120.64	2241.28	colon normal	
colon tumor GW98-560	23513	26.12	1121.89	2243.78	colon tumor	1.00
colon normal GW98-894	24691	24.85	2283.56	4567.12	colon normal	
colon tumor GW98-893	24690	24.37	2989.5	5979.00	colon tumor	1.31
lung normal GW98-3	20742	24.37	2984.11	5968.22	lung normal	
lung tumor GW98-2	20741	25.38	1691.06	3382.12	lung tumor	-1.76
lung normal GW97-179	20677	25.07	2020.52	4041.04	lung normal	
lung tumor GW97-178	20676	24.61	2607.03	5214.06	lung tumor	1.29
lung normal GW98-165	21922	24.92	2195.85	4391.70	lung normal	
lung tumor GW98-164	21921	25.36	1712.62	3425.24	lung tumor	-1.28
lung normal GW98-282	22584	26.24	1049.97	2099.94	lung normal	
lung tumor GW98-281	22583	25.94	1241.8	2483.60	lung tumor	1.18
breast normal GW00-392	28750	25.26	1813.7	1813.70	breast normal	
breast tumor GW00-391	28746	24.87	2259.54	4519.08	breast tumor	2.49
breast normal GW00-413	28798	25.4	1672.46	1672.46	breast normal	
breast tumor GW00-412	28797	25.21	1864.18	3728.36	breast tumor	2.23
breast normal GW00-235:238	27592-95	25.68	1435.2	1435.20	breast normal	
breast tumor GW00-231:234	27588-91	24.08	3510.78	3510.78	breast tumor	2.45
breast normal GW98-621	23656	24.16	3363.26	6726.52	breast normal	
breast tumor GW98-620	23655	24.19	3300.23	6600.46	breast tumor	-1.02
brain normal BB99-542	25507	22.64	7880.57	15761.14	brain normal	
brain normal BB99-406	25509	23.32	5357.05	10714.10	brain normal	
brain normal BB99-904	25546	23.66	4436.27	8872.54	brain normal	
brain stage 5 ALZ BB99-874	25502	24.7	2474.23	4948.46	brain stage 5 ALZ	-2.38
brain stage 5 ALZ BB99-887	25503	23.22	5674.88	11349.76	brain stage 5 ALZ	-1.04
brain stage 5 ALZ BB99-862	25504	23.5	4868.6	9737.20	brain stage 5 ALZ	-1.21
brain stage 5 ALZ BB99-927	25542	23.17	5843.2	11686.40	brain stage 5 ALZ	-1.01
CT lung	normal	25.61	1486.99	2973.98	CT lung Nml	
lung 26	normal	26.55	879.91		lung 26 Nml	
lung 27	normal	29.44	174.3	174.30	lung 27 Nml	

lung 24	COPD	29.99	128.5	128.50	lung 24 COPD	-8.67
lung 28	COPD	29.56	163.34	163.34	lung 28 COPD	-6.82
lung 23	COPD	29.59	160.67	160.67	lung 23 COPD	-6.94
lung 25	normal	29.24	194.83	194.83	lung 25 Nml	
asthmatic lung ODO3112	29321	27.22	604.38	604.38	asthmatic lung	-1.84
asthmatic lung ODO3433	29323	26.46	923.43	1846.86	asthmatic lung	1.66
asthmatic lung ODO3397	29322	26.16	1094.36	2188.72	asthmatic lung	1.96
asthmatic lung ODO4928	29325	25.51	1576.72	3153.44	asthmatic lung	2.83
endo cells	control	29.09	211.78	211.78	endo cells	
endo VEGF		30.07	122.67	122.67	endo VEGF	-1.73
endo bFGF		29.93	132.63	132.63	endo bFGF	-1.60
heart Clontech	normal	27.35	561.26	1122.52	heart	
heart (T-1) ischemic	29417	23.82	4053.65	8107.30	heart (T-1) ischemic	7.22
heart (T-14) non-obstructive DCM	29422	23.96	3746.25	7492.50	heart (T-14) non-obstructive DCM	6.67
heart (T-3399) DCM	29426	23.35	5282.35	10564.70	heart (T-3399) DCM	9.41
adenoid GW99-269	26162	25.71	1405.41	2810.82	adenoid	
tonsil GW98-280	22582	23.97	3725.77	7451.54	tonsil	
T cells PC00314	28453	25.03	2062.68	4125.36	T cells	
PBMNC		30.16	116.69	116.69	PBMNC	
monocyte		30.15	117.05	234.10	monocyte	
B cells PC00665	28455	23.22	5673.63	11347.26	B cells	
dendritic cells	28441	25.74	1385.65	2771.30	dendritic cells	
neutrophils	28440	27.14	631.86	631.86	neutrophils	
eosinophils	28446	28.27	335.66	671.32	eosinophils	
BM unstim		30.08	122.25	122.25	BM unstim	
BM stim	treated	29.57	162.71	162.71	BM stim	1.33
osteo dif	treated	29.07	214.84	214.84	osteo dif	2.91
osteo undif		30.98	73.85	73.85	osteo undif	
chondrocytes		25.41	1667.28	4168.20	chondrocytes	
OA Synovium IP12/01	29462	24.65	2554.39	2554.39	OA Synovium	
OA Synovium NP10/01	29461	25.72	1399	2798.00	OA Synovium	
OA Synovium NP57/00	28464	25.24	1828.2	3656.40	OA Synovium	
RA Synovium NP03/01	28466	25.69	1422.61	2845.22	RA Synovium	
RA Synovium NP71/00	28467	25.25	1818.15	3636.30	RA Synovium	
RA Synovium NP45/00	28475	25.22	1857.13	3714.26	RA Synovium	
OA bone (biobank)	29217	26.19	1074.74	1074.74	OA bone (biobank)	
OA bone Sample 1	J. Emory	26.71	805.65	1611.30	OA bone	
OA bone Sample 2	J. Emory	26.96	700.88	1401.76	OA bone	
Cartilage (pool)	Normal	26.38	968.45	1936.90	Nml Cartilage (pool)	
Cartilage (pool)	OA	28.07	376.23	752.46	OA Cartilage (pool)	-2.57
PBL uninfected	28441	25.09	1997.75	3995.50	PBL uninfected	
PBL HIV IIIB	28442	25.36	1710.81	3421.62	PBL HIV IIIB	-1.17
MRC5 uninfected (100%)	29158	25.28	1788.71	3577.42	MRC5 uninfected (100%)	

MRC5 HSV strain F	29178	30.17	116.17	232.34	MRC5 HSV strain F	-15.40
W12 cells	29179	27.6	489.01	978.02	W12 cells	
Keratinocytes	29180	26.4	959.61	1919.22	Keratinocytes	
B-actin control		25.62	1482.86			
genomic		25.42	1657.68			
1.00E+05		18.49	100000			
1.00E+05		18.49	100000			
1.00E+04		21.94	10000			
1.00E+04		21.98	10000			
1.00E+03		25.34	1000			
1.00E+03		25.39	1000			
1.00E+02		30.59	100			
1.00E+02		30.9	100			
1.00E+01		32.51	10			
1.00E+01		39.12	10			
1.00E-00		39.07	1			
1.00E-00		36.71	1			
NTC		39.63	-1			
*lung 26 Normal has been omitted due to multiple amplification failures from that sample						

Gene Name sbg1012732GLUT

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.08
colon tumor	1.69
colon tumor	1.00
colon tumor	1.31
lung tumor	-1.76
lung tumor	1.29
lung tumor	-1.28
lung tumor	1.18
breast tumor	2.49
breast tumor	2.23
breast tumor	2.45
breast tumor	-1.02
brain stage 5 ALZ	-2.38
brain stage 5 ALZ	-1.04
brain stage 5 ALZ	-1.21
brain stage 5 ALZ	-1.01
lung 24	-8.67
lung 28	-6.82
lung 23	-6.94
asthmatic lung	-1.84
asthmatic lung	1.66
asthmatic lung	1.96
asthmatic lung	2.83
endo VEGF	-1.73

endo bFGF	-1.60
heart T-1	7.22
heart T-14	6.67
heart T-3399	9.41
BM stim	1.33
osteo dif	2.91
Cartilage (pool)	-2.57
PBL HIV IIIB	-1.17
MRC5 HSV strain F	-15.40

Gene Name sbg1012732GLUTb

The same as sbg1012732GLUT.

5

Gene Name sbg1018172CSP

Moderate to low overall expression. Highest normal expression is seen in the whole brain, kidney, thyroid, and uterus. This gene is expressed in all of the samples representing the female reproductive system. Highest disease expression is seen in many of the normal/tumor lung samples and the asthmatic lung samples. Downregulation in 2 of 4 lung tumor samples and upregulation in 2 of 4 breast tumor samples suggests an involvement in cancers of the lung and breast.

10

Downregulation in 3 of 3 COPD samples suggests a potential role for this gene in chronic obstructive pulmonary disorder. Upregulation in 2 of 4 asthmatic lung samples implies an involvement in asthma. Upregulation in 1 of 3 disease heart samples implies an involvement in cardiovascular disease such as obstructive DCM. Downregulation in the OA cartilage pool with corroborating low expression in the immune cells (T and B cells in particular) implicates this gene in osteoarthritis and rheumatoid arthritis. Upregulation in the HSV-infected MRC5 cells suggests that this gene may be a host factor in HSV.

15

20

Sample sbg1018172CSP	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	35.54, 34.87	7.65	11.21	9.43	3.06	16.34	154.08
Subcutaneous Adipose Zenbio	40, 40	0.4	0	0.20	0.96	52.36	10.47
Adrenal Gland Clontech	40, 40	0	0	0.00	0.61	81.97	0.00
Whole Brain Clontech	25.71, 25.78	1950.98	1867.58	1909.28	7.24	6.91	13185.6 4
Fetal Brain Clontech	40, 40	0	0	0.00	0.48	103.95	0.00
Cerebellum Clontech	36.32, 35.16	4.95	9.48	7.22	2.17	23.04	166.24
Cervix	36.76, 36.16	3.85	5.42	4.64	2.42	20.66	95.76
Colon	36.52, 36.41	4.41	4.7	4.56	2.71	18.45	84.04
Endometrium	36.4, 35.92	4.73	6.19	5.46	0.73	68.21	372.44
Esophagus	40, 40	0	0	0.00	1.37	36.50	0.00
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	40, 40	0	0	0.00	2.58	19.38	0.00
Jejunum	36.53, 33.22	4.38	28.28	16.33	6.60	7.58	123.71

Kidney	32.81, 32.45	35.74	43.67	39.71	2.12	23.58	936.44
Liver	35.92, 36.2	6.19	5.29	5.74	1.50	33.33	191.33
Fetal Liver Clontech	31.57, 30.46	71.69	134.34	103.02	10.40	4.81	495.26
Lung	33.35, 36.86	26.32	3.65	14.99	2.57	19.46	291.54
Mammary Gland Clontech	32.99, 32.17	32.23	51.27	41.75	13.00	3.85	160.58
Myometrium	34.99, 40	10.44	0	5.22	2.34	21.37	111.54
Omentum	35.61, 40	7.37	0	3.69	3.94	12.69	46.76
Ovary	35.83, 35.54	6.53	7.67	7.10	4.34	11.52	81.80
Pancreas	35.86, 40	6.39	0	3.20	0.81	61.80	197.47
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	34.26, 34.03	15.73	17.96	16.85	5.48	9.12	153.70
Placenta Clontech	32.64, 33.16	39.34	29.26	34.30	5.26	9.51	326.05
Prostate	35.71, 40	6.95	0	3.48	3.00	16.67	57.92
Rectum	33.84, 34.42	19.99	14.41	17.20	1.23	40.65	699.19
Salivary Gland Clontech	40, 40	0	0	0.00	7.31	6.84	0.00
Skeletal Muscle Clontech	34.2, 40	16.33	0	8.17	1.26	39.68	324.01
Skin	35.02, 40	10.31	0.48	5.40	1.21	41.32	222.93
Small Intestine Clontech	40, 40	0	0	0.29	0.98	51.07	14.81
Spleen	40, 35.31	0	8.71	4.36	4.92	10.16	44.26
Stomach	40, 35.4	0	8.3	4.15	2.73	18.32	76.01
Testis Clontech	40, 37.31	0	2.82	1.41	0.57	87.87	123.90
Thymus Clontech	30.9, 31.1	104.45	93.52	98.99	9.89	5.06	500.43
Thyroid	31.62, 31.57	69.89	71.93	70.91	2.77	18.05	1279.96
Trachea Clontech	34.19, 34.08	16.41	17.49	16.95	9.71	5.15	87.28
Urinary Bladder	40, 34.4	0	14.55	7.28	5.47	9.14	66.50
Uterus	30.63, 30.6	122.13	123.57	122.85	5.34	9.36	1150.28
genomic	26.58	1190.6					
b-actin	27.38	758.43					
1.00E+05	19.07	100000					
1.00E+05	19.35	100000					
1.00E+04	22.57	10000					
1.00E+04	22.59	10000					
1.00E+03	26.24	1000					
1.00E+03	26.31	1000					
1.00E+02	30.18	100					
1.00E+02	31.64	100					
1.00E+01	35.9	10					
1.00E+01	40	0					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	0					
NTC	40	0					

Sample	Reg number	Ct	Mean GOI	copies of mRNA	Sample	Fold Change
sbg1018172CSP						

	(GSK identifier)		copies	detected/ 50 ng total RNA		in Disease Populati on
colon normal GW98-167	21941	27.29	1064.89	2129.78	colon normal	
colon tumor GW98-166	21940	26.18	2023.11	4046.22	colon tumor	1.90
colon normal GW98-178	22080	30.45	168.68	337.36	colon normal	
colon tumor GW98-177	22060	29.33	324.49	648.98	colon tumor	1.92
colon normal GW98-561	23514	30.36	177.62	355.24	colon normal	
colon tumor GW98-560	23513	32.27	58.7	117.40	colon tumor	-3.03
colon normal GW98-894	24691	30.71	145.57	291.14	colon normal	
colon tumor GW98-893	24690	32.3	57.43	114.86	colon tumor	-2.53
lung normal GW98-3	20742	24.82	4478.67	8957.34	lung normal	
lung tumor GW98-2	20741	33.61	26.86	53.72	lung tumor	-166.74
lung normal GW97-179	20677	26.31	1874.25	3748.50	lung normal	
lung tumor GW97-178	20676	24.52	5311.72	10623.44	lung tumor	2.83
lung normal GW98-165	21922	24.99	4042.28	8084.56	lung normal	
lung tumor GW98-164	21921	27.19	1127.26	2254.52	lung tumor	-3.59
lung normal GW98-282	22584	25.51	2990.53	5981.06	lung normal	
lung tumor GW98-281	22583	26.67	1522.51	3045.02	lung tumor	-1.96
breast normal GW00-392	28750	32.25	59.17	59.17	breast normal	
breast tumor GW00-391	28746	30.48	165.82	331.64	breast tumor	5.60
breast normal GW00-413	28798	34.58	15.31	15.31	breast normal	
breast tumor GW00-412	28797	30.05	213.4	426.80	breast tumor	27.88
breast normal GW00-235:238	27592-95	34.41	16.85	16.85	breast normal	
breast tumor GW00-231:234	27588-91	33.52	28.31	28.31	breast tumor	1.68
breast normal GW98-621	23656	28.22	618.19	1236.38	breast normal	
breast tumor GW98-620	23655	32.02	67.94	135.88	breast tumor	-9.10
brain normal BB99-542	25507	29.11	367.88	735.76	brain normal	
brain normal BB99-406	25509	28.05	682.39	1364.78	brain normal	
brain normal BB99-904	25546	29.06	379.07	758.14	brain normal	
brain stage 5 ALZ BB99-874	25502	30.06	211.81	423.62	brain stage 5 ALZ	-2.25
brain stage 5 ALZ BB99-887	25503	26.97	1280.13	2560.26	brain stage 5 ALZ	2.69
brain stage 5 ALZ BB99-862	25504	29.85	239.03	478.06	brain stage 5 ALZ	-1.99
brain stage 5 ALZ BB99-927	25542	28.13	652.56	1305.12	brain stage 5 ALZ	1.37
CT lung	normal	26.97	1280.81	2561.62	CT lung Nml	
lung 26	normal	32.21	60.75		lung 26 Nml	
lung 27	normal	34	21.39	21.39	lung 27 Nml	
lung 24	COPD	32.11	64.11	64.11	lung 24 COPD	-13.87
lung 28	COPD	33.01	38.18	38.18	lung 28 COPD	-23.29
lung 23	COPD	32.84	42.15	42.15	lung 23 COPD	-21.10
lung 25	normal	31.63	84.78	84.78	lung 25 Nml	
asthmatic lung ODO3112	29321	29.4	310.75	310.75	asthmatic lung	-2.86
asthmatic lung ODO3433	29323	27.02	1242.79	2485.58	asthmatic lung	2.80

asthmatic lung ODO3397	29322	25.97	2289.74	4579.48	asthmatic lung	5.15
asthmatic lung ODO4928	29325	26.84	1380.5	2761.00	asthmatic lung	3.10
endo cells	control	40	0	0.00	endo cells	
endo VEGF		40	0	0.00	endo VEGF	0.00
endo bFGF		40	1.01	1.01	endo bFGF	1.01
heart Clontech	normal	33.02	37.93	75.86	heart	
heart (T-1) ischemic	29417	34.34	17.51	35.02	heart (T-1) ischemic	-2.17
heart (T-14) non- obstructive DCM	29422	34.85	13.07	26.14	heart (T-14) non- obstructive DCM	-2.90
heart (T-3399) DCM	29426	29.74	254.69	509.38	heart (T-3399) DCM	6.71
adenoid GW99-269	26162	35.07	11.5	23.00	adenoid	
tonsil GW98-280	22582	40	0	0.00	tonsil	
T cells PC00314	28453	36.12	6.22	12.44	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	40	0	0.00	B cells	
dendritic cells	28441	40	0	0.00	dendritic cells	
neutrophils	28440	35.43	9.3	9.30	neutrophils	
eosinophils	28446	40	1.32	2.64	eosinophils	
BM unstim		40	0	0.00	BM unstim	
BM stim	treated	40	0	0.00	BM stim	0.00
osteo dif	treated	40	0	0.00	osteo dif	0.00
osteo undif		40	0	0.00	osteo undif	
chondrocytes		33.23	33.49	83.73	chondrocytes	
OA Synovium IP12/01	29462	34.9	12.68	12.68	OA Synovium	
OA Synovium NP10/01	29461	28.55	510.63	1021.26	OA Synovium	
OA Synovium NP57/00	28464	34	21.41	42.82	OA Synovium	
RA Synovium NP03/01	28466	40	0	0.00	RA Synovium	
RA Synovium NP71/00	28467	36.2	5.96	11.92	RA Synovium	
RA Synovium NP45/00	28475	36.38	5.34	10.68	RA Synovium	
OA bone (biobank)	29217	35.58	8.52	8.52	OA bone (biobank)	
OA bone Sample 1	J. Emory	33.54	27.91	55.82	OA bone	
OA bone Sample 2	J. Emory	34.92	12.54	25.08	OA bone	
Cartilage (pool)	Normal	33.88	22.98	45.96	Nml Cartilage (pool)	
Cartilage (pool)	OA	40	0	0.00	OA Cartilage (pool)	-45.96
PBL uninfected	28441	30.74	142.65	285.30	PBL uninfected	
PBL HIV IIIB	28442	32.47	52.13	104.26	PBL HIV IIIB	-2.74
MRC5 uninfected (100%)	29158	40	0	0.00	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	30.06	211.88	423.76	MRC5 HSV strain F	423.76
W12 cells	29179	39.65	0.8	1.60	W12 cells	
Keratinocytes	29180	33.76	24.58	49.16	Keratinocytes	
B-actin control		27.17	1140.82			
genomic		26.81	1405.46			

1.00E+05		19.68	100000			
1.00E+05		19.63	100000			
1.00E+04		23.15	10000			
1.00E+04		23.27	10000			
1.00E+03		27.1	1000			
1.00E+03		27.33	1000			
1.00E+02		31.34	100			
1.00E+02		32.04	100			
1.00E+01		35.09	10			
1.00E+01		40	10			
1.00E-00		40	0			
1.00E-00		40	0			
NTC		40	0			
*lung 26 Normal has been omitted due to multiple amplification failures from that sample						

Gene Name sbg1018172CSP

Disease-tissues	Fold Change in Disease Population Relative to Normal
colon tumor	1.90
colon tumor	1.92
colon tumor	-3.03
colon tumor	-2.53
lung tumor	-166.74
lung tumor	2.83
lung tumor	-3.59
lung tumor	-1.96
breast tumor	5.60
breast tumor	27.88
breast tumor	1.68
breast tumor	-9.10
brain stage 5 ALZ	-2.25
brain stage 5 ALZ	2.69
brain stage 5 ALZ	-1.99
brain stage 5 ALZ	1.37
lung 24	-13.87
lung 28	-23.29
lung 23	-21.10
asthmatic lung	-2.86
asthmatic lung	2.80
asthmatic lung	5.15
asthmatic lung	3.10
endo VEGF	0.00
endo bFGF	1.01
heart T-1	-2.17
heart T-14	-2.90
heart T-3399	6.71
BM stim	0.00
osteo dif	0.00
Cartilage (pool)	-45.96

PBL HIV IIIB	-2.74
MRC5 HSV strain F	423.76

Gene Name sbg1004570ERGIC

5 Moderate to low overall expression. This gene is expressed fairly ubiquitously in all normal samples analyzed with highest levels of expression seen in the whole brain, hypothalamus, pancreas, and head of pancreas. This pattern of expression suggests that this gene may be involved in diabetes or other metabolic diseases. Highest disease expression is seen in the colon, breast, and lung normal/tumor pairs as well as the Alzheimer's brain samples and the T cells, B cells, dendritic cells, and eosinophils. Upregulation in 2 of 4 breast tumor samples suggests a role for this gene in breast cancer. Upregulation in 2 of 4 Alzheimer's brain samples implies an involvement in 10 Alzheimer's disease. Downregulation in 3 of 3 COPD samples and 4 of 4 asthmatic lung samples suggests a potential role for this gene in chronic obstructive pulmonary disorder and asthma. Upregulated in the stimulated bone marrow sample.

Sample sbg1004570ERGIC	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0	0	0.00	3.06	16.34	0.00
Subcutaneous Adipose Zenbio	39.46, 35.22	0.08	1.37	0.73	0.96	52.36	37.96
Adrenal Gland Clontech	36.91, 36.21	0.43	0.7	0.57	0.61	81.97	46.31
Whole Brain Clontech	26.46, 30.31	547.02	39.49	293.26	7.24	6.91	2025.24
Fetal Brain Clontech	36.04, 36.66	0.78	0.51	0.65	0.48	103.95	67.05
Cerebellum Clontech	35.46, 34.63	1.16	2.06	1.61	2.17	23.04	37.10
Cervix	35.63, 36.28	1.04	0.67	0.86	2.42	20.66	17.67
Colon	35.38, 34.57	1.23	2.13	1.68	2.71	18.45	31.00
Endometrium	40, 35.24	0.06	1.35	0.71	0.73	68.21	48.09
Esophagus	35.02, 36.31	1.57	0.65	1.11	1.37	36.50	40.51
Heart Clontech	37.16, 35.48	0.36	1.15	0.76	1.32	37.88	28.60
Hypothalamus	35.15, 36.01	1.44	0.8	1.12	0.32	155.28	173.91
Ileum	35.04, 35.5	1.55	1.13	1.34	2.58	19.38	25.97
Jejunum	35.14, 34.88	1.45	1.73	1.59	6.60	7.58	12.05
Kidney	35.81, 37.16	0.91	0.36	0.64	2.12	23.58	14.98
Liver	36.19, 34.39	0.71	2.42	1.57	1.50	33.33	52.17
Fetal Liver Clontech	32.94, 33.1	6.51	5.85	6.18	10.40	4.81	29.71
Lung	34.54, 35.16	2.18	1.43	1.81	2.57	19.46	35.12
Mammary Gland Clontech	34.45, 34.76	2.33	1.88	2.11	13.00	3.85	8.10
Myometrium	34.08, 34.61	2.98	2.09	2.54	2.34	21.37	54.17
Omentum	35.22, 36.18	1.37	0.71	1.04	3.94	12.69	13.20
Ovary	34.52, 34.83	2.21	1.78	2.00	4.34	11.52	22.98
Pancreas	34.45, 33.99	2.32	3.18	2.75	0.81	61.80	169.96
Head of Pancreas	33.24, 33.63	5.32	4.06	4.69	1.57	31.85	149.36
Parotid Gland	33.22, 33.08	5.38	5.9	5.64	5.48	9.12	51.46
Placenta Clontech	36.02, 35.39	0.79	1.22	1.01	5.26	9.51	9.55

Prostate	35.98, 35.07	0.81	1.51	1.16	3.00	16.67	19.33
Rectum	36.71, 37.13	0.49	0.37	0.43	1.23	40.65	17.48
Salivary Gland Clontech	33.51, 34.22	4.41	2.71	3.56	7.31	6.84	24.35
Skeletal Muscle Clontech	35.53, 34.52	1.11	2.21	1.66	1.26	39.68	65.87
Skin	36.02, 36.07	0.79	0.77	0.78	1.21	41.32	32.23
Small Intestine Clontech	35.02, 37.21	1.57	0.35	0.96	0.98	51.07	49.03
Spleen	35.64, 35.27	1.03	1.33	1.18	4.92	10.16	11.99
Stomach	35.08, 35.41	1.51	1.2	1.36	2.73	18.32	24.82
Testis Clontech	35.48, 38.1	1.15	0.19	0.67	0.57	87.87	58.88
Thymus Clontech	32.15, 31.72	11.16	14.98	13.07	9.89	5.06	66.08
Thyroid	35.61, 35.09	1.05	1.49	1.27	2.77	18.05	22.92
Trachea Clontech	35.04, 34.75	1.55	1.89	1.72	9.71	5.15	8.86
Urinary Bladder	36.11, 36.24	0.74	0.68	0.71	5.47	9.14	6.49
Uterus	35.59, 35.68	1.06	1	1.03	5.34	9.36	9.64
genomic	24.29	2416.83					
b-actin	26.09	706.6					
1.00E+05	20.09	100000					
1.00E+05	19.53	100000					
1.00E+04	21.72	10000					
1.00E+04	21.68	10000					
1.00E+03	24.13	1000					
1.00E+03	24.18	1000					
1.00E+02	29.13	100					
1.00E+02	30.16	100					
1.00E+01	31.7	10					
1.00E+01	33.16	10					
1.00E-00	36.93	1					
1.00E-00	34.75	1					
NTC	36	-1					
NTC	35.85	-1					

Sample sbg1004570ERGIC	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	30.51	38.25	76.50	colon normal	
colon tumor GW98-166	21940	31.28	23.13	46.26	colon tumor	-1.65
colon normal GW98-178	22080	31.79	16.57	33.14	colon normal	
colon tumor GW98-177	22060	31.3	22.86	45.72	colon tumor	1.38
colon normal GW98-561	23514	30.71	33.5	67.00	colon normal	
colon tumor GW98-560	23513	31.18	24.73	49.46	colon tumor	-1.35
colon normal GW98-894	24691	30.16	48.2	96.40	colon normal	
colon tumor GW98-893	24690	29.96	55	110.00	colon tumor	1.14
lung normal GW98-3	20742	30.1	50.19	100.38	lung normal	
lung tumor GW98-2	20741	32.86	8.15	16.30	lung tumor	-6.16

lung normal GW97-179	20677	31.65	18.14	36.28	lung normal	
lung tumor GW97-178	20676	31.05	26.89	53.78	lung tumor	1.48
lung normal GW98-165	21922	30.44	40.16	80.32	lung normal	
lung tumor GW98-164	21921	30.72	33.36	66.72	lung tumor	-1.20
lung normal GW98-282	22584	31.83	16.13	32.26	lung normal	
lung tumor GW98-281	22583	32.09	13.61	27.22	lung tumor	-1.19
breast normal GW00-392	28750	32.76	8.73	8.73	breast normal	
breast tumor GW00-391	28746	30.68	34.38	68.76	breast tumor	7.88
breast normal GW00-413	28798	37.11	0.5	0.50	breast normal	
breast tumor GW00-412	28797	30.8	31.72	63.44	breast tumor	126.88
breast normal GW00-235:238	27592-95	38.8	0.17	0.17	breast normal	
breast tumor GW00-231:234	27588-91	37.36	0.43	0.43	breast tumor	2.53
breast normal GW98-621	23656	31.67	17.86	35.72	breast normal	
breast tumor GW98-620	23655	32.59	9.8	19.60	breast tumor	-1.82
brain normal BB99-542	25507	33.66	4.83	9.66	brain normal	
brain normal BB99-406	25509	33.24	6.37	12.74	brain normal	
brain normal BB99-904	25546	33.2	6.54	13.08	brain normal	
brain stage 5 ALZ BB99-874	25502	33.1	6.97	13.94	brain stage 5 ALZ	1.18
brain stage 5 ALZ BB99-887	25503	30.93	29.17	58.34	brain stage 5 ALZ	4.93
brain stage 5 ALZ BB99-862	25504	31.44	20.73	41.46	brain stage 5 ALZ	3.51
brain stage 5 ALZ BB99-927	25542	32.93	7.83	15.66	brain stage 5 ALZ	1.32
CT lung	normal	32.62	9.6	19.20	CT lung Nml	
lung 26	normal				lung 26 Nml	
lung 27	normal	40	0	0.00	lung 27 Nml	
lung 24	COPD	39.15	0.13	0.13	lung 24 COPD	-49.46
lung 28	COPD	40	0.08	0.08	lung 28 COPD	-80.38
lung 23	COPD	38.59	0.19	0.19	lung 23 COPD	-33.84
lung 25	normal	40	0.09	0.09	lung 25 Nml	
asthmatic lung ODO3112	29321	40	0	0.00	asthmatic lung	-6.43
asthmatic lung ODO3433	29323	38.47	0.2	0.40	asthmatic lung	-16.08
asthmatic lung ODO3397	29322	38.01	0.28	0.56	asthmatic lung	-11.48
asthmatic lung ODO4928	29325	38.13	0.26	0.52	asthmatic lung	-12.37
endo cells	control	36.24	0.89	0.89	endo cells	
endo VEGF		39.8	0.09	0.09	endo VEGF	-9.89
endo bFGF		37.19	0.47	0.47	endo bFGF	-1.89
heart Clontech	normal	35.52	1.43	2.86	heart	
heart (T-1) ischemic	29417	33.79	4.43	8.86	heart (T-1) ischemic	3.10
heart (T-14) non-obstructive DCM	29422	34.81	2.27	4.54	heart (T-14) non-obstructive DCM	1.59
heart (T-3399) DCM	29426	34.11	3.59	7.18	heart (T-3399) DCM	2.51
adenoid GW99-269	26162	34.97	2.05	4.10	adenoid	
tonsil GW98-280	22582	33.05	7.23	14.46	tonsil	

T cells PC00314	28453	31.09	26.2	52.40	T cells	
PBMNC		38.01	0.28	0.28	PBMNC	
monocyte		36.29	0.86	1.72	monocyte	
B cells PC00665	28455	32.13	13.23	26.46	B cells	
dendritic cells	28441	31.94	14.96	29.92	dendritic cells	
neutrophils	28440	34.08	3.66	3.66	neutrophils	
eosinophils	28446	32.23	12.37	24.74	eosinophils	
BM unstim		39.73	0.09	0.09	BM unstim	
BM stim	treated	37.03	0.53	0.53	BM stim	5.89
osteo dif	treated	36.8	0.61	0.61	osteo dif	0.61
osteo undif		40	0	0.00	osteo undif	
chondrocytes		31.85	15.9	39.75	chondrocytes	
OA Synovium IP12/01	29462	38.61	0.19	0.19	OA Synovium	
OA Synovium NP10/01	29461	33.11	6.96	13.92	OA Synovium	
OA Synovium NP57/00	28464	33.81	4.39	8.78	OA Synovium	
RA Synovium NP03/01	28466	33.11	6.96	13.92	RA Synovium	
RA Synovium NP71/00	28467	32.03	14.14	28.28	RA Synovium	
RA Synovium NP45/00	28475	32.47	10.55	21.10	RA Synovium	
OA bone (biobank)	29217	35.25	1.7	1.70	OA bone (biobank)	
OA bone Sample 1	J. Emory	34.54	2.72	5.44	OA bone	
OA bone Sample 2	J. Emory	36.28	0.87	1.74	OA bone	
Cartilage (pool)	Normal	35.24	1.71	3.42	Nml Cartilage (pool)	
Cartilage (pool)	OA	34.45	2.87	5.74	OA Cartilage (pool)	1.68
PBL uninfected	28441	32.53	10.19	20.38	PBL uninfected	
PBL HIV IIIB	28442	31.77	16.79	33.58	PBL HIV IIIB	1.65
MRC5 uninfected (100%)	29158	33.12	6.87	13.74	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	33.76	4.54	9.08	MRC5 HSV strain F	-1.51
W12 cells	29179	33.1	6.96	13.92	W12 cells	
Keratinocytes	29180	32.67	9.29	18.58	Keratinocytes	
B-actin control		26.03	726.55			
genomic		24.63	1825.58			
1.00E+05		19.96	100000			
1.00E+05		19.27	100000			
1.00E+04		21.83	10000			
1.00E+04		21.45	10000			
1.00E+03		23.86	1000			
1.00E+03		23.84	1000			
1.00E+02		28.42	100			
1.00E+02		29.35	100			
1.00E+01		33.3	10			
1.00E+01		35.09	10			
1.00E-00		35.16	1			
1.00E-00		36.05	1			
NTC		38.24	-1			
*lung 26 Normal has						

been omitted due to multiple amplification failures from that sample						
--	--	--	--	--	--	--

Gene Name sbg1004570ERGIC

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-1.65
colon tumor	1.38
colon tumor	-1.35
colon tumor	1.14
lung tumor	-6.16
lung tumor	1.48
lung tumor	-1.20
lung tumor	-1.19
breast tumor	7.88
breast tumor	126.88
breast tumor	2.53
breast tumor	-1.82
brain stage 5 ALZ	1.18
brain stage 5 ALZ	4.93
brain stage 5 ALZ	3.51
brain stage 5 ALZ	1.32
lung 24	-49.46
lung 28	-80.38
lung 23	-33.84
asthmatic lung	-6.43
asthmatic lung	-16.08
asthmatic lung	-11.48
asthmatic lung	-12.37
endo VEGF	-9.89
endo bFGF	-1.89
heart T-1	3.10
heart T-14	1.59
heart T-3399	2.51
BM stim	5.89
osteo dif	0.61
Cartilage (pool)	1.68
PBL HIV IIIB	1.65
MRC5 HSV strain F	-1.51

Gene Name sbg1016995IGBrcpt

- 5 Moderate to low overall expression. Highest normal expression is seen in the whole brain in lung with slightly lower levels of expression in the endometrium, ileum, rectum, and skin. High level of expression in the skin may suggest a possible role for this gene in psoriasis and Lupus. The patterns of expression in the samples on the disease plate indicate that this gene is highly specific to the adenoid and tonsil. Downregulation in 2 of 4 lung tumor samples and upregulation in 2 of 4 breast tumor samples suggests an involvement in cancers of the lung and breast.
- 10 Downregulation in 3 of 3 COPD samples suggests a potential role for this gene in chronic obstructive pulmonary disorder. Upregulated in the stimulated bone marrow sample. Downregulated in the differentiated osteoblast. Upregulated in the HIV-infected PBL cells suggests that this gene may be a host factor in HIV.
- 15

Sample	Ct (sample	Mean	Mean	Average	18S	50	copies of
--------	------------	------	------	---------	-----	----	-----------

sbg1016995IGBrectp	1 and 2)	GOI copies (sample 1)	GOI copies (sample 2)	GOI Copies	rRNA (ng)	ng/18S rRNA (ng)	mRNA detected/ 50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0.61	0.61	0.61	3.06	16.34	9.97
Subcutaneous Adipose Zenbio	40, 40	0.59	0.56	0.58	0.96	52.36	30.10
Adrenal Gland Clontech	39.89, 39.79	0.54	0.57	0.56	0.61	81.97	45.49
Whole Brain Clontech	30.69, 30.76	108.67	104.35	106.51	7.24	6.91	735.57
Fetal Brain Clontech	39.41, 40	0.71	0.62	0.67	0.48	103.95	69.13
Cerebellum Clontech	39.33, 37.82	0.74	1.78	1.26	2.17	23.04	29.03
Cervix	36.12, 36.58	4.73	3.62	4.18	2.42	20.66	86.26
Colon	35.23, 38.35	7.9	1.31	4.61	2.71	18.45	84.96
Endometrium	35.51, 40	6.73	0	3.37	0.73	68.21	229.54
Esophagus	37.22, 38.18	2.5	1.45	1.98	1.37	36.50	72.08
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	34.65, 34.11	11.04	15.09	13.07	2.58	19.38	253.20
Jejunum	34.84, 34.04	9.91	15.72	12.82	6.60	7.58	97.08
Kidney	38.2, 39.11	1.43	0.84	1.14	2.12	23.58	26.77
Liver	34.47, 38.59	12.26	1.14	6.70	1.50	33.33	223.33
Fetal Liver Clontech	33.51, 33.07	21.26	27.43	24.35	10.40	4.81	117.04
Lung	27.32, 37.11	755.31	2.68	379.00	2.57	19.46	7373.44
Mammary Gland Clontech	36.31, 36.4	4.24	4.03	4.14	13.00	3.85	15.90
Myometrium	40, 38.7	0.7	1.07	0.89	2.34	21.37	18.91
Omentum	35.44, 36.14	6.98	4.68	5.83	3.94	12.69	73.98
Ovary	38.76, 35.49	1.03	6.82	3.93	4.34	11.52	45.22
Pancreas	40, 38.56	0.48	1.16	0.82	0.81	61.80	50.68
Head of Pancreas	40, 40	0	0	0.00	1.57	31.85	0.00
Parotid Gland	36.8, 35.45	3.2	6.98	5.09	5.48	9.12	46.44
Placenta Clontech	35.63, 35.11	6.27	8.47	7.37	5.26	9.51	70.06
Prostate	37.4, 37.5	2.26	2.14	2.20	3.00	16.67	36.67
Rectum	35.45, 35.25	6.94	7.81	7.38	1.23	40.65	299.80
Salivary Gland Clontech	37.3, 37.06	2.4	2.75	2.58	7.31	6.84	17.61
Skeletal Muscle Clontech	40, 39.34	0	0.74	0.37	1.26	39.68	14.68
Skin	38.84, 34.56	0.98	11.63	6.31	1.21	41.32	260.54
Small Intestine Clontech	40, 40	0	0.63	0.32	0.98	51.07	16.09
Spleen	34.37, 34.89	13	9.6	11.30	4.92	10.16	114.84
Stomach	39.73, 35.52	0.59	6.67	3.63	2.73	18.32	66.48
Testis Clontech	38.91, 40	0.94	0	0.47	0.57	87.87	41.30
Thymus Clontech	31.96, 32.96	52.16	29.2	40.68	9.89	5.06	205.66
Thyroid	35.53, 40	6.66	0	3.33	2.77	18.05	60.11
Trachea Clontech	37.99, 37.69	1.61	1.91	1.76	9.71	5.15	9.06

Urinary Bladder	39.69, 39.02	0.6	0.89	0.75	5.47	9.14	6.81
Uterus	34.41, 33.56	12.67	20.75	16.71	5.34	9.36	156.46
genomic	26.31	1359.1					
b-actin	27.2	812.88					
1.00E+05	19.24	100000					
1.00E+05	19.38	100000					
1.00E+04	22.67	10000					
1.00E+04	22.67	10000					
1.00E+03	26.31	1000					
1.00E+03	26.28	1000					
1.00E+02	30.17	100					
1.00E+02	31.02	100					
1.00E+01	36.17	10					
1.00E+01	34.46	10					
1.00E-00	40	0					
1.00E-00	40	1					
NTC	40	-1					
NTC	40	-1					

Sample sbg1016995IGBrecpt	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	29.45	174.86	349.72	colon normal	
colon tumor GW98-166	21940	32.1	33.44	66.88	colon tumor	-5.23
colon normal GW98-178	22080	31.77	41.07	82.14	colon normal	
colon tumor GW98-177	22060	32.66	23.5	47.00	colon tumor	-1.75
colon normal GW98-561	23514	29.15	211.24	422.48	colon normal	
colon tumor GW98-560	23513	31.25	56.95	113.90	colon tumor	-3.71
colon normal GW98-894	24691	30.68	81.3	162.60	colon normal	
colon tumor GW98-893	24690	31.33	54.12	108.24	colon tumor	-1.50
lung normal GW98-3	20742	31.86	38.92	77.84	lung normal	
lung tumor GW98-2	20741	34.55	7.25	14.50	lung tumor	-5.37
lung normal GW97-179	20677	28.38	342.07	684.14	lung normal	
lung tumor GW97-178	20676	32.1	33.52	67.04	lung tumor	-10.20
lung normal GW98-165	21922	32.2	31.46	62.92	lung normal	
lung tumor GW98-164	21921	30.5	90.8	181.60	lung tumor	2.89
lung normal GW98-282	22584	29.82	138.8	277.60	lung normal	
lung tumor GW98-281	22583	32.72	22.64	45.28	lung tumor	-6.13
breast normal GW00-392	28750	31.5	48.65	48.65	breast normal	
breast tumor GW00-391	28746	31.9	37.84	75.68	breast tumor	1.56
breast normal GW00-413	28798	34.37	8.07	8.07	breast normal	
breast tumor GW00-412	28797	29.97	126.73	253.46	breast tumor	31.41
breast normal GW00-	27592-95	35.08	5.2	5.20	breast normal	

235:238						
breast tumor GW00-231:234	27588-91	32.3	29.54	29.54	breast tumor	5.68
breast normal GW98-621	23656	31.11	61.96	123.92	breast normal	
breast tumor GW98-620	23655	31.27	56.22	112.44	breast tumor	-1.10
brain normal BB99-542	25507	33.3	15.82	31.64	brain normal	
brain normal BB99-406	25509	33.02	18.83	37.66	brain normal	
brain normal BB99-904	25546	33.93	10.62	21.24	brain normal	
brain stage 5 ALZ BB99-874	25502	32.36	28.38	56.76	brain stage 5 ALZ	1.88
brain stage 5 ALZ BB99-887	25503	31.79	40.66	81.32	brain stage 5 ALZ	2.69
brain stage 5 ALZ BB99-862	25504	32.04	34.76	69.52	brain stage 5 ALZ	2.30
brain stage 5 ALZ BB99-927	25542	31.79	40.51	81.02	brain stage 5 ALZ	2.68
CT lung	normal	33.32	15.63	31.26	CT lung Nml	
lung 26	normal	29.8	140.4		lung 26 Nml	
lung 27	normal	38.71	0.54	0.54	lung 27 Nml	
lung 24	COPD	39.31	0.37	0.37	lung 24 COPD	-29.00
lung 28	COPD	37.09	1.48	1.48	lung 28 COPD	-7.25
lung 23	COPD	38.02	0.83	0.83	lung 23 COPD	-12.93
lung 25	normal	39.22	0.39	0.39	lung 25 Nml	
asthmatic lung ODO3112	29321	37.96	0.86	0.86	asthmatic lung	-12.48
asthmatic lung ODO3433	29323	31.15	60.54	121.08	asthmatic lung	11.28
asthmatic lung ODO3397	29322	33.74	12.01	24.02	asthmatic lung	2.24
asthmatic lung ODO4928	29325	31.59	46.09	92.18	asthmatic lung	8.59
endo cells	control	36.98	1.58	1.58	endo cells	
endo VEGF		39.28	0.38	0.38	endo VEGF	-4.16
endo bFGF		37.3	1.3	1.30	endo bFGF	-1.22
heart Clontech	normal	35.73	3.45	6.90	heart	
heart (T-1) ischemic	29417	34.7	6.58	13.16	heart (T-1) ischemic	1.91
heart (T-14) non-obstructive DCM	29422	37.5	1.15	2.30	heart (T-14) non-obstructive DCM	-3.00
heart (T-3399) DCM	29426	35.15	4.96	9.92	heart (T-3399) DCM	1.44
adenoid GW99-269	26162	25.98	1528.07	3056.14	adenoid	
tonsil GW98-280	22582	24.6	3626.43	7252.86	tonsil	
T cells PC00314	28453	34.49	7.5	15.00	T cells	
PBMNC		37.58	1.09	1.09	PBMNC	
monocyte		37.4	1.22	2.44	monocyte	
B cells PC00665	28455	31.68	43.59	87.18	B cells	
dendritic cells	28441	35.05	5.28	10.56	dendritic cells	
neutrophils	28440	35.68	3.57	3.57	neutrophils	
eosinophils	28446	35.07	5.23	10.46	eosinophils	
BM unstim		38.19	0.75	0.75	BM unstim	
BM stim	treated	34.27	8.61	8.61	BM stim	11.48
osteo dif	treated	40	0.09	0.09	osteo dif	-5.78
osteo undif		40	0.52	0.52	osteo undif	

chondrocytes		32.86	20.79	51.98	chondrocytes	
OA Synovium IP12/01	29462	31.85	38.99	38.99	OA Synovium	
OA Synovium NP10/01	29461	34.76	6.33	12.66	OA Synovium	
OA Synovium NP57/00	28464	31.39	51.96	103.92	OA Synovium	
RA Synovium NP03/01	28466	31.1	62.3	124.60	RA Synovium	
RA Synovium NP71/00	28467	31.95	36.76	73.52	RA Synovium	
RA Synovium NP45/00	28475	32.43	27.14	54.28	RA Synovium	
OA bone (biobank)	29217	35.84	3.22	3.22	OA bone (biobank)	
OA bone Sample 1	J. Emory	35.43	4.18	8.36	OA bone	
OA bone Sample 2	J. Emory	34.86	5.95	11.90	OA bone	
Cartilage (pool)	Normal	34.79	6.21	12.42	Nml Cartilage (pool)	
Cartilage (pool)	OA	36.55	2.07	4.14	OA Cartilage (pool)	-3.00
PBL uninfected	28441	30.02	122.76	245.52	PBL uninfected	
PBL HIV IIIB	28442	28.17	388.59	777.18	PBL HIV IIIB	3.17
MRC5 uninfected (100%)	29158	34.6	7.01	14.02	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	33.27	16.13	32.26	MRC5 HSV strain F	2.30
W12 cells	29179	34.43	7.8	15.60	W12 cells	
Keratinocytes	29180	35.04	5.31	10.62	Keratinocytes	
B-actin control		27	808.77			
genomic		26.18	1353.11			
1.00E+05		19.37	100000			
1.00E+05		19.59	100000			
1.00E+04		22.75	10000			
1.00E+04		22.8	10000			
1.00E+03		26.43	1000			
1.00E+03		26.17	1000			
1.00E+02		30.09	100			
1.00E+02		30.21	100			
1.00E+01		35.27	10			
1.00E+01		35.55	10			
1.00E-00		39.31	1			
1.00E-00		34.53	1			
NTC		40	-1			
*lung 26 Normal has been omitted due to multiple amplification failures from that sample						

Gene Name sbg1016995IGBrectp

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	-5.23
colon tumor	-1.75
colon tumor	-3.71
colon tumor	-1.50

lung tumor	-5.37
lung tumor	-10.20
lung tumor	2.89
lung tumor	-6.13
breast tumor	1.56
breast tumor	31.41
breast tumor	5.68
breast tumor	-1.10
brain stage 5 ALZ	1.88
brain stage 5 ALZ	2.69
brain stage 5 ALZ	2.30
brain stage 5 ALZ	2.68
lung 24	-29.00
lung 28	-7.25
lung 23	-12.93
asthmatic lung	-12.48
asthmatic lung	11.28
asthmatic lung	2.24
asthmatic lung	8.59
endo VEGF	-4.16
endo bFGF	-1.22
heart T-1	1.91
heart T-14	-3.00
heart T-3399	1.44
BM stim	11.48
osteo dif	-5.78
Cartilage (pool)	-3.00
PBL HIV IIIB	3.17
MRC5 HSV strain F	2.30

Gene Name sbg1151bSREC

Highest overall expression in normal and disease samples. Fairly ubiquitously expressed but highest normal expression in adipocytes, adipose, whole brain, fetal brain, and endometrium. Highest disease expression in one of the colon tumor samples, one of the normal lung samples, chondrocytes, and the uninfected MRC5. There are no significant changes in brains from patients with Alzheimer's disease. Downregulation in 1 of 4 lung tumors suggests possible implication in lung cancer. Upregulation in 1 of 4 breast tumor samples is sufficient to claim a role in cancer of the breast. Upregulation in 1 of 4 asthma lungs implies a role in asthma. Downregulation in HSV implicates involvement in herpes simplex virus as a potential host factor. High expression in immune cells. High expression in cartilage and bone samples from patients with OA as well as high expression in chondrocytes possible involvement in osteoarthritis and rheumatoid arthritis. Additionally, the corroborating expression in immune cells (particularly B and T cells) provides additional evidence for a role in RA/OA.

Sample sbg1151bSREC	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detected /50 ng total RNA
Subcutaneous Adipocytes Zenbio	28.31, 28.35	477.04	466.02	471.53	3.06	16.34	7704.74
Subcutaneous Adipose Zenbio	30.79, 30.22	122.3	166.95	144.63	0.96	52.36	7571.99
Adrenal Gland Clontech	33.96, 33.47	21.39	27.97	24.68	0.61	81.97	2022.95
Whole Brain Clontech	24.07, 23.98	4889.28	5123.8	5006.54	7.24	6.91	34575.55

Fetal Brain Clontech	31.1, 32.29	103.16	53.55	78.36	0.48	103.95	8145.01
Cerebellum Clontech	31.03, 31.99	107.02	63.18	85.10	2.17	23.04	1960.83
Cervix	31.22, 30.06	96.6	182.64	139.62	2.42	20.66	2884.71
Colon	30.68, 30.53	129.52	140.99	135.26	2.71	18.45	2495.48
Endometrium	30.59, 30.44	136.06	147.8	141.93	0.73	68.21	9681.45
Esophagus	33.11, 32.17	34.08	57.32	45.70	1.37	36.50	1667.88
Heart Clontech	33.19, 32.41	32.68	50.11	41.40	1.32	37.88	1567.99
Hypothalamus	34.34, 40	17.4	0	8.70	0.32	155.28	1350.93
Ileum	31.29, 30.13	92.84	174.99	133.92	2.58	19.38	2595.25
Jejunum	29.7, 29.48	221.9	251.05	236.48	6.60	7.58	1791.48
Kidney	31.03, 30.17	107.15	171.45	139.30	2.12	23.58	3285.38
Liver	32.89, 33.16	38.61	33.17	35.89	1.50	33.33	1196.33
Fetal Liver Clontech	28.05, 28.15	550.64	518.95	534.80	10.40	4.81	2571.13
Lung	29.39, 28.63	263.85	398.99	331.42	2.57	19.46	6447.86
Mammary Gland Clontech	27.56, 27.39	717.67	789.94	753.81	13.00	3.85	2899.25
Myometrium	29.08, 28.93	312.86	339.46	326.16	2.34	21.37	6969.23
Omentum	30.72, 29.32	126.7	273.04	199.87	3.94	12.69	2536.42
Ovary	28.89, 28.68	346.91	388.02	367.47	4.34	11.52	4233.47
Pancreas	35.24, 35.75	10.59	8.02	9.31	0.81	61.80	575.09
Head of Pancreas	35.25, 33.21	10.57	32.34	21.46	1.57	31.85	683.28
Parotid Gland	28.46, 27.84	438.62	615.36	526.99	5.48	9.12	4808.30
Placenta Clontech	28.67, 28.66	391.9	393.15	392.53	5.26	9.51	3731.23
Prostate	30.55, 31.46	139.05	84.64	111.85	3.00	16.67	1864.08
Rectum	31.28, 31.43	93.33	85.92	89.63	1.23	40.65	3643.29
Salivary Gland Clontech	31.13, 30.57	101.46	138.16	119.81	7.31	6.84	819.49
Skeletal Muscle Clontech	34.05, 35.24	20.38	10.59	15.49	1.26	39.68	614.48
Skin	31.53, 31.2	81.49	97.36	89.43	1.21	41.32	3695.25
Small Intestine Clontech	34.81, 33.82	13.41	23.18	18.30	0.98	51.07	934.37
Spleen	31.01, 30.44	108.41	147.9	128.16	4.92	10.16	1302.39
Stomach	32.01, 31.1	62.6	102.97	82.79	2.73	18.32	1516.21
Testis Clontech	31.74, 32.29	72.49	53.45	62.97	0.57	87.87	5533.39
Thymus Clontech	28.84, 28.53	356.64	421.44	389.04	9.89	5.06	1966.84
Thyroid	30.12, 30.04	176.76	184.5	180.63	2.77	18.05	3260.47
Trachea Clontech	28.48, 28.38	434.3	459.42	446.86	9.71	5.15	2301.03
Urinary Bladder	29.63, 29.55	230.25	241.15	235.70	5.47	9.14	2154.48
Uterus	28.69, 28.37	387.47	461.07	424.27	5.34	9.36	3972.57
genomic	26.24	1487.44					
b-actin	27.28	839.2					
1.00E+05	18.96	100000					
1.00E+05	19.34	100000					
1.00E+04	22.64	10000					
1.00E+04	22.84	10000					
1.00E+03	26.22	1000					
1.00E+03	26.04	1000					
1.00E+02	31.04	100					

1.00E+02	30.1	100				
1.00E+01	33.33	10				
1.00E+01	39.08	10				
1.00E-00	40	0				
1.00E-00	40	1				
NTC	40	0				
NTC	40	0				

Sample sbg1151bSREC	Reg number (GSK identifie r)	Ct	Mean GOI copies	copies of mRNA detected /50 ng total RNA	Sample	Fold Change in Disease Populatio n
colon normal GW98-167	21941	24.55	5357.25	10714.50	colon normal	
colon tumor GW98-166	21940	22.61	19769.94	39539.88	colon tumor	3.69
colon normal GW98-178	22080	26.71	1252.3	2504.60	colon normal	
colon tumor GW98-177	22060	26.13	1854.49	3708.98	colon tumor	1.48
colon normal GW98-561	23514	26.82	1165.06	2330.12	colon normal	
colon tumor GW98-560	23513	25.75	2390.26	4780.52	colon tumor	2.05
colon normal GW98-894	24691	26.06	1948.57	3897.14	colon normal	
colon tumor GW98-893	24690	26.59	1362.55	2725.10	colon tumor	-1.43
lung normal GW98-3	20742	22.77	17753	35506.00	lung normal	
lung tumor GW98-2	20741	26.17	1803.8	3607.60	lung tumor	-9.84
lung normal GW97-179	20677	25.24	3370.88	6741.76	lung normal	
lung tumor GW97-178	20676	24.14	7057.92	14115.84	lung tumor	2.09
lung normal GW98-165	21922	23.87	8442.49	16884.98	lung normal	
lung tumor GW98-164	21921	24.08	7339.83	14679.66	lung tumor	-1.15
lung normal GW98-282	22584	25.51	2804.42	5608.84	lung normal	
lung tumor GW98-281	22583	24.2	6787.31	13574.62	lung tumor	2.42
breast normal GW00-392	28750	25.7	2480.5	2480.50	breast normal	
breast tumor GW00-391	28746	25.77	2364.2	4728.40	breast tumor	1.91
breast normal GW00-413	28798	26.06	1948.1	1948.10	breast normal	
breast tumor GW00-412	28797	27.21	894.11	1788.22	breast tumor	-1.09
breast normal GW00-235:238	27592-95	26.64	1317.83	1317.83	breast normal	
breast tumor GW00-231:234	27588-91	23.91	8225.11	8225.11	breast tumor	6.24
breast normal GW98-621	23656	24.46	5693.73	11387.46	breast normal	
breast tumor GW98-620	23655	23.91	8218.73	16437.46	breast tumor	1.44
brain normal BB99-542	25507	26.39	1553.13	3106.26	brain normal	
brain normal BB99-406	25509	26.63	1325.63	2651.26	brain normal	
brain normal BB99-904	25546	27.05	1001.6	2003.20	brain normal	
brain stage 5 ALZ BB99-874	25502	26.97	1052.15	2104.30	brain stage 5 ALZ	-1.23
brain stage 5 ALZ BB99-887	25503	25.28	3289.99	6579.98	brain stage 5 ALZ	2.54
brain stage 5 ALZ BB99-862	25504	26.24	1725.06	3450.12	brain stage 5 ALZ	1.33
brain stage 5 ALZ BB99-	25542	26.12	1864.26	3728.52	brain stage 5 ALZ	1.44

927						
CT lung KC	normal	24.74	4711.99	9423.98	CT lung	
lung 26 KC	normal	27.78	611.36	611.36	lung 26	
lung 27 KC	normal	28.27	439.19	439.19	lung 27	
lung 24 KC	COPD	26.92	1091.11	1091.11	lung 24	-2.56
lung 28 KC	COPD	26.93	1085.65	1085.65	lung 28	-2.57
lung 23 KC	COPD	27.19	909.68	909.68	lung 23	-3.07
lung 25 KC	normal	27.62	678.79	678.79	lung 25	
asthmatic lung ODO3112	29321	25.33	3173.52	3173.52	asthmatic lung	1.14
asthmatic lung ODO3433	29323	25.36	3106.89	6213.78	asthmatic lung	2.23
asthmatic lung ODO3397	29322	23.81	8809.42	17618.84	asthmatic lung	6.32
asthmatic lung ODO4928	29325	24.76	4649.98	9299.96	asthmatic lung	3.34
endo cells KC	control	26	2021.13	2021.13	endo cells	
endo VEGF KC		25.78	2343.21	2343.21	endo VEGF	1.16
endo bFGF KC		26.7	1264.03	1264.03	endo bFGF	-1.60
heart Clontech	normal	26.62	1330.64	2661.28	heart	
heart (T-1) ischemic	29417	27.07	984.33	1968.66	heart T-1	-1.35
heart (T-14) non-obstructive DCM	29422	26.11	1877.75	3755.50	heart T-14	1.41
heart (T-3399) DCM	29426	26.34	1608.79	3217.58	heart T-3399	1.21
adenoid GW99-269	26162	27.64	670.25	1340.50	adenoid	
tonsil GW98-280	22582	27.61	684.15	1368.30	tonsil	
T cells PC00314	28453	25.95	2098.64	4197.28	T cells	
PBMNC		31.16	63.19	63.19	PBMNC	
monocyte		31.32	56.63	113.26	monocyte	
B cells PC00665	28455	26.34	1609.52	3219.04	B cells	
dendritic cells 28441		28.25	444.68	889.36	dendritic cells	
neutrophils	28440	26.11	1874.13	1874.13	neutrophils	
eosinophils	28446	26.39	1553.82	3107.64	eosinophils	
BM unstim		31.45	51.76	51.76	BM unstim	
BM stim		31.28	58.37	58.37	BM stim	1.13
osteo dif		24.62	5118.74	5118.74	osteo dif	1.70
osteo undif		25.41	3015.6	3015.60	osteo undif	
chondrocytes		22.12	27351.89	68379.73	chondrocytes	
OA Synovium IP12/01	29462	24.5	5551.61	5551.61	OA Synovium	
OA Synovium NP10/01	29461	25.1	3711.29	7422.58	OA Synovium	
OA Synovium NP57/00	28464	24.5	5537.1	11074.20	OA Synovium	
RA Synovium NP03/01	28466	26.45	1492.95	2985.90	RA Synovium	
RA Synovium NP71/00	28467	24.44	5783.96	11567.92	RA Synovium	
RA Synovium NP45/00	28475	25.94	2112.54	4225.08	RA Synovium	
OA bone (biobank)	29217	26.16	1811.72	1811.72	OA bone (biobank)	
OA bone Sample 1	J. Emory	24.54	5399.31	10798.62	OA bone	
OA bone Sample 2	J. Emory	26.07	1931.94	3863.88	OA bone	
Cartilage (pool)	Normal	25.09	3730.42	7460.84	Cartilage (pool)	
Cartilage (pool)	OA	25.79	2328.66	4657.32	Cartilage (pool)	-1.60
PBL uninfected	28441	26.95	1068.16	2136.32	PBL uninfected	
PBL HIV IIIB	28442	28.41	401.86	803.72	PBL HIV IIIB	-2.66

MRC5 uninfected (100%)	29158	22.28	24694.87	49389.74	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	29.07	256.64	513.28	MRC5 HSV strain F	-96.22
W12 cells	29179	28.37	410.68	821.36	W12 cells	
Keratinocytes	29180	29.12	249.25	498.50	Keratinocytes	
B-actin control		27.53	721.15			
genomic		26.92	1091.74			
1.00E+05		19.96	100000			
1.00E+05		20.19	100000			
1.00E+04		23.43	10000			
1.00E+04		23.34	10000			
1.00E+03		26.64	1000			
1.00E+03		26.8	1000			
1.00E+02		31.34	100			
1.00E+02		31.48	100			
1.00E+01		34.9	10			
1.00E+01		34.19	10			
1.00E-00		40	0			
1.00E-00		35.53	1			
NTC		40	0			

Gene Name sbg1151bSREC

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	3.69
colon tumor	1.48
colon tumor	2.05
colon tumor	-1.43
lung tumor	-9.84
lung tumor	2.09
lung tumor	-1.15
lung tumor	2.42
breast tumor	1.91
breast tumor	-1.09
breast tumor	6.24
breast tumor	1.44
brain stage 5 ALZ	-1.23
brain stage 5 ALZ	2.54
brain stage 5 ALZ	1.33
brain stage 5 ALZ	1.44
lung 24	-2.56
lung 28	-2.57
lung 23	-3.07
asthmatic lung	1.14
asthmatic lung	2.23
asthmatic lung	6.32
asthmatic lung	3.34
endo VEGF	1.16
endo bFGF	-1.60
heart T-1	-1.35

heart T-14	1.41
heart T-3399	1.21
BM stim	1.13
osteo dif	1.70
Cartilage (pool)	-1.60
PBL HIV IIIB	-2.66
MRC5 HSV strain F	-96.22

Gene Name sbg1399854ANK

Low overall expression. Highest normal expression is seen in the whole brain, fetal brain, and liver. Good levels of expression are seen in all of the samples representing the female reproductive system. Highest disease expression is seen in the normal and Alzheimer's brain samples as well as in the dendritic cells. Upregulation in 2 of 4 colon tumor samples and in 2 of 4 breast tumor samples as well as downregulation in 2 of 4 lung tumor samples implicates this gene in cancers of the colon, breast, and lung. Downregulation in 3 of 3 COPD samples and in 2 of 4 asthmatic lung samples suggests a potential role for this gene in chronic obstructive pulmonary disorder and asthma. Downregulation in the OA cartilage sample as well as corroborating low expression in the normal chondrocytes and many of the immune cells suggests involvement in osteoarthritis. Upregulation in the HSV-infected MRC5 cells suggests that this gene may be a host factor in HSV.

Sample sbg1399854ANK	Ct (sample 1 and 2)	Mean GOI copies (sample 1)	Mean GOI copies (sample 2)	Average GOI Copies	18S rRNA (ng)	50 ng/18S rRNA (ng)	copies of mRNA detecte d/50 ng total RNA
Subcutaneous Adipocytes Zenbio	40, 40	0	0	0.00	3.06	16.34	0.00
Subcutaneous Adipose Zenbio	40, 40	1.83	1.77	1.80	0.96	52.36	94.24
Adrenal Gland Clontech	40, 40	1.75	0	0.88	0.61	81.97	71.72
Whole Brain Clontech	28.57, 28.35	944.29	1058.09	1001.19	7.24	6.91	6914.30
Fetal Brain Clontech	36.57, 34.65	14.38	39.28	26.83	0.48	103.95	2788.98
Cerebellum Clontech	37.21, 36.71	10.3	13.37	11.84	2.17	23.04	272.70
Cervix	36.3, 40	16.52	0	8.26	2.42	20.66	170.66
Colon	36.17, 35.71	17.73	22.5	20.12	2.71	18.45	371.13
Endometrium	40, 36.1	0	18.41	9.21	0.73	68.21	627.90
Esophagus	40, 40	0	1.58	0.79	1.37	36.50	28.83
Heart Clontech	40, 40	0	0	0.00	1.32	37.88	0.00
Hypothalamus	40, 40	0	0	0.00	0.32	155.28	0.00
Ileum	40, 40	0	0	0.00	2.58	19.38	0.00
Jejunum	34.07, 34.37	53.18	45.33	49.26	6.60	7.58	373.14
Kidney	37.55, 40	8.58	0	4.29	2.12	23.58	101.18
Liver	36.53, 35.62	14.69	23.59	19.14	1.50	33.33	638.00
Fetal Liver Clontech	34.56, 34.61	41.04	40.04	40.54	10.40	4.81	194.90
Lung	40, 40	0	0	0.00	2.57	19.46	0.00
Mammary Gland Clontech	39.07, 39.45	3.89	3.18	3.54	13.00	3.85	13.60
Myometrium	39.5, 35.37	3.1	26.93	15.02	2.34	21.37	320.83
Omentum	40, 36.18	0	17.61	8.81	3.94	12.69	111.74
Ovary	35.87, 34.34	20.75	46.22	33.49	4.34	11.52	385.77

Pancreas	40, 40	0	0	0.00	0.81	61.80	0.00
Head of Pancreas	40, 39.79	0	2.66	1.33	1.57	31.85	42.36
Parotid Gland	35.2, 38.6	29.46	4.97	17.22	5.48	9.12	157.07
Placenta Clontech	40, 38.14	0	6.32	3.16	5.26	9.51	30.04
Prostate	40, 40	0	0	0.00	3.00	16.67	0.00
Rectum	40, 39.2	0	3.63	1.82	1.23	40.65	73.78
Salivary Gland Clontech	40, 39.19	2.19	3.64	2.92	7.31	6.84	19.94
Skeletal Muscle Clontech	40, 39.37	0	3.32	1.66	1.26	39.68	65.87
Skin	40, 40	0	2.09	1.05	1.21	41.32	43.18
Small Intestine Clontech	40, 40	1.44	0	0.72	0.98	51.07	36.77
Spleen	35.36, 40	27.05	1.84	14.45	4.92	10.16	146.80
Stomach	40, 37.03	1.93	11.29	6.61	2.73	18.32	121.06
Testis Clontech	40, 37.99	0	6.82	3.41	0.57	87.87	299.65
Thymus Clontech	38.47, 35.55	5.32	24.52	14.92	9.89	5.06	75.43
Thyroid	40, 40	0	2.15	1.08	2.77	18.05	19.40
Trachea Clontech	35.37, 36.67	26.97	13.66	20.32	9.71	5.15	104.61
Urinary Bladder	39.07, 40	3.89	1.42	2.66	5.47	9.14	24.27
Uterus	36.01, 33.41	19.29	75.06	47.18	5.34	9.36	441.71
genomic	29.57	558.84					
b-actin	27.57	1592.66					
1.00E+05	19.91	100000					
1.00E+05	20.08	100000					
1.00E+04	23.79	10000					
1.00E+04	24.06	10000					
1.00E+03	27.72	1000					
1.00E+03	28.29	1000					
1.00E+02	31.95	100					
1.00E+02	33.62	100					
1.00E+01	39.75	10					
1.00E+01	35.41	10					
1.00E-00	40	0					
1.00E-00	40	0					
NTC	40	-1					
NTC	40	-1					

Sample sbg1399854ANK	Reg number (GSK identifier)	Ct	Mean GOI copies	copies of mRNA detecte d/50 ng total RNA	Sample	Fold Change in Disease Populati on
colon normal GW98-167	21941	35.32	22.34	44.68	colon normal	
colon tumor GW98-166	21940	34.14	47.5	95.00	colon tumor	2.13
colon normal GW98-178	22080	36.16	13.07	26.14	colon normal	
colon tumor GW98-177	22060	35.58	18.93	37.86	colon tumor	1.45

colon normal GW98-561	23514	36.58	10.03	20.06	colon normal	
colon tumor GW98-560	23513	32.61	126.48	252.96	colon tumor	12.61
colon normal GW98-894	24691	35.61	18.62	37.24	colon normal	
colon tumor GW98-893	24690	33.24	84.75	169.50	colon tumor	4.55
lung normal GW98-3	20742	34.77	31.8	63.60	lung normal	
lung tumor GW98-2	20741	33.63	66.03	132.06	lung tumor	2.08
lung normal GW97-179	20677	34.76	32.04	64.08	lung normal	
lung tumor GW97-178	20676	34.44	39.23	78.46	lung tumor	1.22
lung normal GW98-165	21922	35.18	24.44	48.88	lung normal	
lung tumor GW98-164	21921	37.99	4.06	8.12	lung tumor	-6.02
lung normal GW98-282	22584	33.64	65.37	130.74	lung normal	
lung tumor GW98-281	22583	37.3	6.34	12.68	lung tumor	-10.31
breast normal GW00-392	28750	36.29	12.08	12.08	breast normal	
breast tumor GW00-391	28746	36.14	13.29	26.58	breast tumor	2.20
breast normal GW00-413	28798	37.08	7.29	7.29	breast normal	
breast tumor GW00-412	28797	33.26	83.58	167.16	breast tumor	22.93
breast normal GW00-235:238	27592-95	38.93	2.24	2.24	breast normal	
breast tumor GW00-231:234	27588-91	36.57	10.08	10.08	breast tumor	4.50
breast normal GW98-621	23656	34.9	29.32	58.64	breast normal	
breast tumor GW98-620	23655	36.11	13.51	27.02	breast tumor	-2.17
brain normal BB99-542	25507	29.6	866.9	1733.80	brain normal	
brain normal BB99-406	25509	31.93	194.87	389.74	brain normal	
brain normal BB99-904	25546	30.38	526.58	1053.16	brain normal	
brain stage 5 ALZ BB99-874	25502	32.7	119.57	239.14	brain stage 5 ALZ	-4.43
brain stage 5 ALZ BB99-887	25503	30.08	634.97	1269.94	brain stage 5 ALZ	1.20
brain stage 5 ALZ BB99-862	25504	29.7	809.22	1618.44	brain stage 5 ALZ	1.53
brain stage 5 ALZ BB99-927	25542	29.93	700.82	1401.64	brain stage 5 ALZ	1.32
CT lung	normal	35.1	25.82	51.64	CT lung Nml	
lung 26	normal	36.74	9.07		lung 26 Nml	
lung 27	normal	40	0	0.00	lung 27 Nml	
lung 24	COPD	40	2.5	2.50	lung 24 COPD	-7.11
lung 28	COPD	40	0	0.00	lung 28 COPD	-17.77
lung 23	COPD	40	0	0.00	lung 23 COPD	-17.77
lung 25	normal	39.39	1.67	1.67	lung 25 Nml	
asthmatic lung ODO3112	29321	40	0	0.00	asthmatic lung	-17.77
asthmatic lung ODO3433	29323	37	7.68	15.36	asthmatic lung	-1.16
asthmatic lung ODO3397	29322	36.08	13.8	27.60	asthmatic lung	1.55
asthmatic lung ODO4928	29325	40	0	0.00	asthmatic lung	-17.77
endo cells	control	40	0	0.00	endo cells	
endo VEGF		40	0	0.00	endo VEGF	0.00
endo bFGF		35.68	17.77	17.77	endo bFGF	17.77
heart Clontech	normal	35.03	26.95	53.90	heart	
heart (T-1) ischemic	29417	36.36	11.53	23.06	heart (T-1) ischemic	-2.34

heart (T-14) non-obstructive DCM	29422	34.57	36.11	72.22	heart (T-14) non-obstructive DCM	1.34
heart (T-3399) DCM	29426	36.25	12.37	24.74	heart (T-3399) DCM	-2.18
adenoid GW99-269	26162	38.51	2.92	5.84	adenoid	
tonsil GW98-280	22582	35.05	26.54	53.08	tonsil	
T cells PC00314	28453	35.5	19.98	39.96	T cells	
PBMNC		40	0	0.00	PBMNC	
monocyte		40	0	0.00	monocyte	
B cells PC00665	28455	33.78	59.82	119.64	B cells	
dendritic cells	28441	29.33	1026.14	2052.28	dendritic cells	
neutrophils	28440	31.3	292.56	292.56	neutrophils	
eosinophils	28446	35.97	14.79	29.58	eosinophils	
BM unstim		35.56	19.16	19.16	BM unstim	
BM stim	treated	34.79	31.48	31.48	BM stim	1.64
osteo dif	treated	40	2.59	2.59	osteo dif	2.59
osteo undif		40	0	0.00	osteo undif	
chondrocytes		37.11	7.15	17.88	chondrocytes	
OA Synovium IP12/01	29462	35.95	14.93	14.93	OA Synovium	
OA Synovium NP10/01	29461	35.74	17.17	34.34	OA Synovium	
OA Synovium NP57/00	28464	39.09	2.02	4.04	OA Synovium	
RA Synovium NP03/01	28466	38.03	3.97	7.94	RA Synovium	
RA Synovium NP71/00	28467	35.08	26.03	52.06	RA Synovium	
RA Synovium NP45/00	28475	37.11	7.13	14.26	RA Synovium	
OA bone (biobank)	29217	33.76	60.54	60.54	OA bone (biobank)	
OA bone Sample 1	J. Emory	33.35	78.68	157.36	OA bone	
OA bone Sample 2	J. Emory	34.15	47.2	94.40	OA bone	
Cartilage (pool)	Normal	35.05	26.63	53.26	Nml Cartilage (pool)	
Cartilage (pool)	OA	37.42	5.87	11.74	OA Cartilage (pool)	-4.54
PBL uninfected	28441	33.95	53.63	107.26	PBL uninfected	
PBL HIV IIIB	28442	33.3	81.2	162.40	PBL HIV IIIB	1.51
MRC5 uninfected (100%)	29158	39.41	1.64	3.28	MRC5 uninfected (100%)	
MRC5 HSV strain F	29178	35.73	17.22	34.44	MRC5 HSV strain F	10.50
W12 cells	29179	35.08	26.08	52.16	W12 cells	
Keratinocytes	29180	36.69	9.33	18.66	Keratinocytes	
B-actin control		28.13	2213.67			
genomic		29.03	1240.79			
1.00E+05		22.03	100000			
1.00E+05		22.36	100000			
1.00E+04		25.68	10000			
1.00E+04		25.78	10000			
1.00E+03		29.01	1000			
1.00E+03		28.67	1000			
1.00E+02		33.46	100			
1.00E+02		40	100			

1.00E+01		38.75	10			
1.00E+01		40	10			
1.00E-00		40	0			
1.00E-00		38.6	1			
NTC		40	0			
*lung 26 Normal has been omitted due to multiple amplification failures from that sample						

Gene Name sbg1399854ANK

Disease tissues	Fold Change in Disease Population Relative to Normal
colon tumor	2.13
colon tumor	1.45
colon tumor	12.61
colon tumor	4.55
lung tumor	2.08
lung tumor	1.22
lung tumor	-6.02
lung tumor	-10.31
breast tumor	2.20
breast tumor	22.93
breast tumor	4.50
breast tumor	-2.17
brain stage 5 ALZ	-4.43
brain stage 5 ALZ	1.20
brain stage 5 ALZ	1.53
brain stage 5 ALZ	1.32
lung 24	-7.11
lung 28	-17.77
lung 23	-17.77
asthmatic lung	-17.77
asthmatic lung	-1.16
asthmatic lung	1.55
asthmatic lung	-17.77
endo VEGF	0.00
endo bFGF	17.77
heart T-1	-2.34
heart T-14	1.34
heart T-3399	-2.18
BM stim	1.64
osteo dif	2.59
Cartilage (pool)	-4.54
PBL HIV IIIB	1.51
MRC5 HSV strain F	10.50

Table V. Additional diseases based on mRNA expression in specific tissues

Tissue Expression	Additional Diseases
Brain	Neurological and psychiatric diseases, including Alzheimers, parasupranuclear palsey, Huntington's disease, myotonic dystrophy, anorexia, depression, schizophrenia, headache, amnesias, anxiety disorders, sleep disorders, multiple sclerosis
Heart	Cardiovascular diseases, including congestive heart failure, dilated cardiomyopathy, cardiac arrhythmias, Hodgson's Disease, myocardial infarction, cardiac arrhythmias
Lung	Respiratory diseases, including asthma, Chronic Obstructive Pulmonary Disease, cystic fibrosis, acute bronchitis, adult respiratory distress syndrome
Liver	Dyslipidemia, hypercholesterolemia, hypertriglyceridemia, cirrhosis, hepatic encephalopathy, fatty hepatocirrhosis, viral and nonviral hepatitis, Type II Diabetes Mellitis, impaired glucose tolerance
Kidney	Renal diseases, including acute and chronic renal failure, acute tubular necrosis, cystinuria, Fanconi's Syndrome, glomerulonephritis, renal cell carcinoma, renovascular hypertension
Skeletal muscle	Eulenburg's Disease, hypoglycemia, obesity, tendinitis, periodic paralyses, malignant hyperthermia, paramyotonia congenita, myotonia congenita
Intestine	Gastrointestinal diseases, including Myotonia congenita, Ileus, Intestinal Obstruction, Tropical Sprue, Pseudomembranous Enterocolitis
Spleen/lymph	Lymphangiectasia, hypersplenism, angiomas, ankylosing spondylitis, Hodgkin's Disease, macroglobulinemia, malignant lymphomas, rheumatoid arthritis
Placenta	Choriocarcinoma, hydatidiform mole, placenta previa
Testis	Testicular cancer, male reproductive diseases, including low testosterone and male infertility
Pancreas	Diabetic ketoacidosis, Type 1 & 2 diabetes, obesity, impaired glucose tolerance

What is claimed is:

1. An isolated polypeptide selected from the group consisting of:
 - 5 (a) an isolated polypeptide encoded by a polynucleotide comprising a sequence set forth in Table I;
 - (b) an isolated polypeptide comprising a polypeptide sequence set forth in Table I; and
 - (c) a polypeptide sequence of a gene set forth in Table I.
- 10 2. An isolated polynucleotide selected from the group consisting of:
 - (a) an isolated polynucleotide comprising a polynucleotide sequence set forth in Table I;
 - (b) an isolated polynucleotide of a gene set forth in Table I;
 - (c) an isolated polynucleotide comprising a polynucleotide sequence encoding a polypeptide set forth in Table I;
 - 15 (d) an isolated polynucleotide encoding a polypeptide set forth in Table I;
 - (e) a polynucleotide which is an RNA equivalent of the polynucleotide of (a) to (d);
or a polynucleotide sequence complementary to said isolated polynucleotide.
- 20 3. An expression vector comprising a polynucleotide capable of producing a polypeptide of claim 1 when said expression vector is present in a compatible host cell.
4. A process for producing a recombinant host cell which comprises the step of introducing an expression vector comprising a polynucleotide capable of producing a polypeptide of claim 1 into a cell such that the host cell, under appropriate culture conditions, produces said
25 polypeptide.
5. A recombinant host cell produced by the process of claim 4.
6. A membrane of a recombinant host cell of claim 5 expressing said polypeptide.
- 30 7. A process for producing a polypeptide which comprises culturing a host cell of claim 5 under conditions sufficient for the production of said polypeptide and recovering said polypeptide from the culture.

SEQUENCE LISTING

<110> SMITHKLINE BEECHAM CORPORATION
 SMITHKLINE BEECHAM p.l.c.
 GLAXO GROUP, LIMITED

<120> NOVEL COMPOUNDS

<130> GP50034

<140> TO BE ASSIGNED

<141> 2001-09-13

<150> 60/232,463

<151> 2000-09-13

<150> 60/232,455

<151> 2000-09-13

<150> 60/237,293

<151> 2000-10-02

<150> 60/246,269

<151> 2000-11-07

<150> 60/252,049

<151> 2000-11-20

<160> 88

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1707

<212> DNA

<213> Homo sapiens

<400> 1

atgaaggaag	cagagatgga	cggtgaggca	gtccgcttct	gcacagataa	ccagtgtgtc	60
tccctgcacc	cccaagaggt	ggactctgtg	gcaatggctc	ctgcagcccc	caagataccg	120
aggctcgttc	aggctacccc	ggcatttatg	gctgtgacct	tggctctctc	tcttgtgact	180
ctctttgtag	tgggtaagcc	cccagttcaa	cagcagacaa	gacctgttcc	gaagcctgtg	240
caagccgtaa	ttctgggaga	caacattact	gggcatttac	cttttgaacc	caacaatcat	300
caccactttg	gcagggaggc	agaaatgcga	gagcttatcc	agacatttaa	aggccacatg	360
gagaattcca	gtgcctgggt	agtagaaatc	cagatgttga	agtgcagagt	ggacaatgtc	420
aattcgcagc	tccaggtgct	cggtgatcat	ctgggaaaca	ccaatgctga	catccagatg	480
gtaaaaggag	ttctaaaagg	tgccactaca	ttgagtttgc	agacacagat	gttaaggagt	540
tccctggagg	gaaccaatgc	tgagatccag	aggctcaagg	aagaccttga	aaaggcagat	600
gctttaactt	tccagacgct	gaatttctta	aaaagcagtt	tagaaaacac	cagcattgag	660
ctccacgtgc	taagcagagg	cttagaaaat	gcaaactctg	aaattcagat	gttgaatgcc	720
agagccaatg	ctgagatcca	gggactaaag	gaaaatttgc	agaacacaaa	tgctttaaac	780
tcccagaccc	aggcctttat	aaaaagcagt	tttgacaaca	ctagtgtctga	gatccagttc	840
ttaagagggtc	atltggaaag	agctgggtgat	gaaattcacg	tgttaaaaag	ggatttgaaa	900
atggtcacag	cccagaccca	aaaagcaaat	ggccgctctg	accagacaga	tactcagatt	960
caggtattca	agtcagagat	ggaaaatgtg	aataccttaa	atgccagat	tcaggtctta	1020
aatgggtcata	tgaaaaatgc	cagcagagag	atacagaccc	taaaacaagg	aatgaagaat	1080
gcttcagcct	taacttccca	gacccagatg	ttagacagca	atctgcagaa	ggccagtgcc	1140
gagatccaga	ggttaagagg	ggatctagag	aacaccaaag	ctctaaccat	ggaaatccag	1200
caggagcaga	gtcgcctgaa	gacctccat	gtggctatta	cttcacagga	acagctacaa	1260

agaacccaaa gtcagcttct ccagatgggc ctgcaaggct ggaagttcaa tgggtggaagc	1320
ttatatattt tttctagtgt caagaagtct tggcatgagg ctgagcagtt ctgcgtgtcc	1380
cagggagccc atctggcatc tgtggcctcc aaggaggagc aggcatttct ggtagagttc	1440
acaagtaaag tgtactactg gatcgggtctc actgacaggg gcacagaggg ctccctggcgc	1500
tggacagatg ggacaccatt caacgccgcc cagaacaaag ccctgttgtt ctccgggttt	1560
tgggaaaaga atcagttctga caactggcgg cacaagaatg ggcagactga agactgtgtc	1620
caaattcagc agaagtggaa tgacatgacc tgtgacaccc cctatcagtg ggtgtgcaag	1680
aagcccatgg gccagggtgt ggcctga	1707

<210> 2

<211> 1095

<212> DNA

<213> Homo sapiens

<400> 2

atgtcgagac aaggaaaatt attttctgct tttggagtgg gttgttgtgt aacggcaggc	60
ttgccaaagg acgataacac tcctagcacc attgcggatg tgcacaatgg ttatacagtg	120
aatgtttag agcaagttct aaaggatagt tttgtgttat ttttcccagg aacactttgt	180
gattttccaa aaatacacca tggatttctg tatgatgaag aagattataa ccctttttcc	240
caagttccta caggggaagt tttctattac tcctgtgaat ataattttgt gtctccttca	300
aaatcctttt ggactcgcac aacatgcaca gaagaaggat ggtcaccaac accgaagtgt	360
ctcagaatgt gttcctttcc ttttgtgaaa aatggtcatt ctgaatcttc aggactaata	420
catctggaag gtgatactgt acaaatattt tgcaacacag gatacagcct tcaaaacaat	480
gagaaaaaca tttcgtgtgt agaacggggc tggccactc ctcccatatg cagcttcact	540
atgaaaacat gtggatacat acctgaactc gagtacgggt atgttcagcc gtctgtccct	600
ccctatcaac atggagtttc agtcgaggtg aattgcagaa atgaatatgc aatgattgga	660
aataacatga ttacctgtat taatggaata tggacagagc ttctatgtg tgttgagtct	720
actgcatatt gtgggcccc tccatctatt aacaatggag ataccacctc attcccatata	780
tcagtatatc tcaccagggtc aacagtgacg taccgttgcc agtcccttcta taaactccag	840
ggctctgtaa ctgtaacatg cagaaataaa cagtggtcag aaccaccaag atgcctagat	900
ccatgtgtgg tatctgaaga aaacatgaac aaaaataaca tacagttaaa atggagaaac	960
gatggaaaac tctatgcaaa aacaggggat gctgttgaat tccagtgtaa attcccatat	1020
aaagcgatga tatcatcacc accatttcga gcaatctgtc aggaagggaa atttgaatat	1080
cctatatgtg aatga	1095

<210> 3

<211> 984

<212> DNA

<213> Homo sapiens

<400> 3

atgttgctct tattcagtgt aatcctaata tcatgggtat ccactgttgg gggagaagga	60
acactttgtg attttccaaa aatacaccat ggatttctgt atgatgaaga agattataac	120
cttttttccc aagttcctac aggggaagtt ttctattact cctgtgaata taattttgtg	180
ttctccttcaa aatccttttg gactcgcata acatgcacag aagaaggatg gtcaccaaca	240
ccgaagtgtc tcagaatgtg ttcccttcc tttgtgaaaa atggtcattc tgaatcttca	300
ggactaatac atctggaagg tgatactgta caaattattt gcaacacagg atacagcctt	360
caaaacaatg agaaaaacat ttcgtgtgta gaacggggct ggtccactcc tcccatatgc	420
agcttcaacta tgaaaacatg tggatacata cctgaactcg agtacgggta tgttcagccg	480
tctgtccctc cctatcaaca tggagtttca gtcgaggtga attgcagaaa tgaatatgca	540
atgattggaa ataacatgat tacctgtatt aatggaatat ggacagagct tcctatgtgt	600
gttgagtcta ctgcatattg tgggccccct ccatctatta acaatggaga taccacctca	660
ttcccatat cagtatatcc tccaggggtc acagtgcagt accgttgcca gtccctctat	720
aaactccagg gctctgtaac tgtaacatgc agaaataaac agtggtcaga accaccaaga	780
tgccatagatc catgtgtggt atctgaagaa aacatgaaca aaaataacat acagttaaaa	840
tggagaaacg atggaaaact ctatgcaaaa acaggggatg ctgttgaatt ccagtgtaaa	900
ttcccatata aagcgatgat atcatcacca ccatttcgag caatctgtca ggaagggaaa	960
tttgaatatc ctatatgtga atga	984

<210> 4
 <211> 465
 <212> DNA
 <213> Homo sapiens

<400> 4
 atggcaccgg ccagagcagg atgctgcccc ctgctgctgc tgettcttggg gctgtgggtg 60
 gcagagggtcc tagtcagagc caagcccaag gacatgacat catctcagtg gtttaaaact 120
 cagcatgtgc agcccagccc tcaagcatgc aactcagcca tgagcatcat caataagtac 180
 acagaacggg gcaaagacct caacaccttc ctgcacgagc ctttctccag tgtggccatc 240
 acctgccaga cccccaacat agcctgcaag aatagctgta aaaactgcc aacagagccac 300
 gggcccatgt ccctgacctat gggtagctc acctcagga agtaccctaa ctgcaggtac 360
 aaagagaagc acctgaacac accttacata gtggcctgtg acctccaca acaggggtgac 420
 ccaggggtacc cacttggtcc tgtgcacttg gataaagttg tctaa 465

<210> 5
 <211> 1509
 <212> DNA
 <213> Homo sapiens

<400> 5
 atgcccagc tgggaggggc tctccgcccc ccgcgcgcgg cccacggggc cgagcctctc 60
 cccagtgcgc tggggccctg cgctgggggt gaccgggacc tgggtcgggg aacccccgga 120
 tgggagccca ggcgccagc ggtcccatc cagcagcagg tcgaccccc gcgagagggg 180
 ccccacctct tccagaacct cctgctcttc ctgtgggccc tgetgaactg tggtttgggg 240
 gtcagtgtc aggttccggg cgagtggacc ccgtgggtgt cctggaccgc ctgctccagc 300
 tcttgcgggc gtggcgtctc tgtgcgcagc cggcgctgcc tccggcttcc tggggaagaa 360
 ccgtgtctgg gagactccca tgagtaccgc ctctgccagt tgccagactg cccccaggg 420
 gctgtgccct tccgagacct acagtgtgcc ctgtacaatg gccgccctgt cctgggcacc 480
 cagaagacct accagtgggt gcccttccat ggggcgccca accagtgcga cctcaactgc 540
 ctggctgagg ggcacgcctt ctaccacagc ttgggcgcgc tcttgagcgg caccgcctgc 600
 agcccggtg cccaggggggt ctgctgggt ggccgctgcc ttagcgcgg ctgtgatggg 660
 ttgttgggt cgggtgccct cgaggaccgc tgtggcgcgt gcggaggcgc caacgactcg 720
 tgccttttcg tgcagcgcgt gtttcgtgac gccgtgcct tcgctgggta ctggaacgtg 780
 acctgatcc ccgagggcgc cagacacatc cgcgtggaac acaggagccg caaccacctg 840
 ggtatcctag gatcactgat gggggcgcat gggcgctacg tgettaatgg gacttgggtg 900
 gtcagcccac cagggacctt cgaggcggcc ggcacgcatt tgggtctacac ccgagacaca 960
 gggccccagg agacattgca agcagccggg cccacctccc atgacctgct cctacaggtc 1020
 ctcttcgagg agcccaacc ttggatcgag tttagttct ggctccctcg ggagcgtac 1080
 agcccccttc aggtctgtgt gcaggccctg ggtggcccc tgaggcagcc tcagccccgg 1140
 ggggtggagc ctacgcccc cgcagccctt gctgtcacc ctgcacagac cccaacgctg 1200
 gccccagtgt tccaggcccg agtgcctggg caccaccacc agggccagga gaccgcctat 1260
 gaggtgcgca tccagctcgt ctacaagaac cgtcgcacac tgcgggcacg cgagtacgtg 1320
 tgggcgcccag gccactgccc ctgcccgatg ctggcaccac accgggacta cctgatgggt 1380
 gtccagcgtc ttgtcagccc cgacggcaca caggaccagc tgetgctgcc ccacgcccgc 1440
 tacgcccggc cctggagccc tgcggaggac agccgcatac gcctgactgc ccggcgctgt 1500
 cctggctga 1509

<210> 6
 <211> 1356
 <212> DNA
 <213> Homo sapiens

<400> 6
 atggactcgg cccctctgtt cccagggccc cactctcttc agaacctcct gctcttctctg 60
 tgggccctgc tgaactgtgg ttgggggtgc agtgcctcagg gtccgggcga gtggaccccg 120
 tgggtgtcct ggaccgcctg ctccagctcc tgcgggcgtg gcgtctctgt gcgcagccgg 180
 cgctgcctcc ggcttctgtg ggaagaaccg tgcctggggag actcccatga gtaccgcctc 240
 tgccagttgc cagactgccc cccaggggct gtgcccttcc gagacctaca gtgtgccctg 300

tacaatggcc	gcctgtcct	gggcacccag	aagacctacc	agtgggtgcc	cttecatggg	360
gcgcccacc	agtgcgacct	caactgcctg	gctgaggggc	acgccttcta	ccacagcttc	420
ggcgcgtcc	tggacggcac	cgctgcagc	ccgggtgcc	aggggtctg	cgtggctggc	480
cgctgcctta	gcgcggctg	tgatgggtg	ttgggtcgg	gtgccctcga	ggaccgctgt	540
ggcgcgtcg	gagggcgcaa	cgactcgtgc	cttttcgtgc	agcgcgtgtt	tcgtgacgcc	600
ggtgccttcg	ctgggtactg	gaacgtgacc	ctgatccccg	agggcgccag	acacatccgc	660
gtggaacaca	ggagcgcgaa	ccacctgggt	atcctaggat	cactgatggg	gggcgatggg	720
cgctacgtgc	ttaatgggca	ctgggtggtc	agcccaccag	ggacctacga	ggcgccgggc	780
acgcatgtgg	tctacaccg	agacacagg	ccccaggaga	cattgcaagc	agccgggccc	840
acctcccatg	acctgtcct	acaggtcctc	ctgcaggagc	ccaaccctgg	catcgagttt	900
gagttctggc	tcctcggga	gcgtacagc	cccttcagg	ctcgtgtgca	ggccctgggc	960
tggccctga	ggcagcctca	gccccggggg	gtggagcctc	agcccccg	agccctgct	1020
gtcaccctg	cacagacccc	aacgtggcc	ccagtgttcc	aggcccgagt	gctgggccc	1080
caccaccagg	cccaggagac	ccgctatgag	gtgcgcctcc	agctcgtcta	caagaaccgc	1140
tcgccactgc	gggcacgcga	gtacgtgtgg	gcccaggcc	actgccctg	cccgatgctg	1200
gcaccccacc	gggactacct	gatggctgtc	cagcgtcttg	tcagccccga	cggcacacag	1260
gaccagctgc	tgctgcccc	cgccggtac	gcccggccct	ggagccctgc	ggaggacagc	1320
cgcatacgc	tgactgccc	gcgtgtcct	ggtga			1356

<210> 7

<211> 1296

<212> DNA

<213> Homo sapiens

<400> 7

atgatccgga	ccccattgtc	ggcctctgcc	catcgccctgc	tcctcccagg	ctcccggggc	60
cgacccccgc	gcaacatgca	gcccacgggc	cgcgagggtt	cccgcgcgt	cagccggcgg	120
tatctgcgcc	gtctgctgct	cotgctactg	ctgctgctgc	tgcggcagcc	cgtaaccgc	180
gcggagacca	cgccggggcg	ccccagagcc	ctctccacgc	tgggtcccc	cagcctcttc	240
accacgccgg	gtgtccccag	cgccctcact	accccaggcc	tcactacgcc	aggcaccccc	300
aaaaccctgg	accttcgggg	tcgcgcgcag	gccctgatgc	ggagtttccc	actcgtggac	360
gggtatgtag	gtctgaacag	ctctcaaaag	ctggccctgc	tcattggcgt	ggaggggtgt	420
cactcactgg	acagcagcct	ctctgtgctg	cgcagtttct	atgtgctggg	ggtgcgctac	480
ctgacactta	ccttcacctg	cagtacacca	tgggcagaga	gttcaccaa	gttcagacac	540
cacatgtaca	ccaacgtcag	cggattgaca	agctttgggt	agaaagtagt	agaggagtgt	600
aaccgcctgg	gcatgatgat	agatttgtcc	tatgcctcgg	acaccttgat	agaagggtc	660
ctggaagtgt	ctcaggctcc	tgtgatcttc	tcccactcag	ctgccagagc	tgtgtgtgac	720
aatttgttga	atgttcccg	tgatatcctg	cagcttctga	agaagaacgg	tggcatcgtg	780
atggtgacac	tgtccatggg	ggtgctgcag	tgcacactgc	ttgctaacgt	gtccactgtg	840
gcagatgatt	cgaatcgatg	ctcggtagcc	gtcattggat	ctgagttcat	cgggattggg	900
ggaaattatg	acgggactgg	ccggttcct	caggggctgg	aggatgtgtc	cacataccca	960
gtcctgatag	aggagtgtgt	gagtcgtagc	tggagcgagg	aagagcttca	agggtgtcct	1020
cgtggaacc	tgctgcgggt	cttcagacaa	gtggaaaagg	tgagagagga	gagcaggggc	1080
cagagccccg	tggaggctga	gtttccatat	gggcaactga	gcacatcctg	ccactcccac	1140
ctcgtgcctc	agaatggaca	ccaggctact	catctggagg	tgaccaagca	gccaaaccaat	1200
cgggtccct	ggaggtcctc	aaatgcctcc	ccataccttg	ttccaggcct	tgtggctgct	1260
gccaccatcc	caaccttcac	ccagtggctc	tgtga			1296

<210> 8

<211> 1443

<212> DNA

<213> Homo sapiens

<400> 8

atgcagccct	ccggcctcga	gggtcccggc	acgtttgggtc	ggtggcctct	gctgagtctg	60
ctgctcctgc	tgctgctgct	ccagcctgta	acctgtgcct	acaccacgcc	aggccccccc	120
agagccctca	ccacgctggg	cgccccaga	gcccacacca	tgcggggcac	ctacgctccc	180
tcgaccacac	tcagtagtcc	cagcaccag	ggcctgcaag	agcaggcacg	ggccctgatg	240
cgggacttcc	cgctcgtgga	cggccacaac	gacctgcccc	tggctctaag	gcaggtttac	300

cagaaagggc	tacaggatgt	taacctgcgc	aatttcagct	acggccagac	cagcctggac	360
aggcttagag	atggcctcgt	gggcgcccag	ttctggtcag	cctatgtgcc	atgccagacc	420
caggaccggg	atgccctgcg	cctcacccctg	gagcagattg	acctcatacg	ccgcattgtg	480
gcctcctatt	ctgagctgga	gcttgtgacc	tcggctaaag	gtctgaacag	ctctcaaaag	540
ctggcctgcc	tcattggcgt	ggagggtggt	cactcactgg	acagcagcct	ctctgtgctg	600
cgcagtttct	atgtgctggg	ggtgcgctac	ctgacactta	ccttcacctg	cagtacacca	660
tgggcagaga	gttccaccaa	gttcagacac	cacatgtaca	ccaacgtcag	cggattgaca	720
agctttgggtg	agaaagtagt	agaggagtgt	aaccgcctgg	gcatgatgat	agatttgtcc	780
tatgcatcgg	acaccttgat	aagaagggtc	ctggaagtgt	ctcaggctcc	tgtgatcttc	840
tcccactcag	ctgccagagc	tgtgtgtgac	aatttgttga	atgttcccga	tgatatcctg	900
cagctttctga	agaagaacgg	tggcatcgtg	atgggtgacac	tgtccatggg	ggtgctgcag	960
tgcaacctgc	ttgctaacgt	gtccactgtg	gcagatcact	ttgaccacat	cagggcagtc	1020
attggatctg	agttcatcgg	gattgggtgga	aattatgacg	ggactggccg	gttccctcag	1080
gggctggagg	atgtgtccac	ataccagtc	ctgatagagg	agttgctgag	tcgtagctgg	1140
agcgaggaag	agcttcaagg	tgtccttcgt	ggaaacctgc	tgcgggtctt	cagacaagtg	1200
gaaaaggtga	gagaggagag	cagggcgag	agccccgtgg	aggctgagtt	tccatatggg	1260
caactgagca	catcctgcca	ctcccacctc	gtgcctcaga	atggacacca	ggctactcat	1320
ctggagggtga	ccaagcagcc	aaccaatcgg	gtccccctgga	ggtcctcaaa	tgccctccca	1380
taccttggtc	caggccttgt	ggctgctgcc	accatcccaa	ccttcaccca	gtggctctgc	1440
tga						1443

<210> 9

<211> 1116

<212> DNA

<213> Homo sapiens

<400> 9

atggatgcag	ccacagctcc	aaagcaagcc	tggcccccat	ggcccccgct	ccttttcttc	60
ctcctcctac	ctggagggag	cggtggcagc	tgccctgctg	tgtgtgactg	cacctcccag	120
ccccaggctg	tgctctgtgg	ccacaggcaa	ctggaggctg	tacctggagg	actcccactg	180
gacactgagc	tcctggacct	gagtgggaac	cgccctccga	aggctcagcc	cctggtgcgg	240
ctccaggagc	tacgcctgtc	aggggcatgc	ctcacctcca	ttgctgcca	tgccctccat	300
ggcttgactg	ccttccacct	cctggatgtg	gcagataacg	cccttcagac	actagaggaa	360
acagctttcc	cttctccaga	caaactggtc	accttgaggc	tgtctggcaa	ccccctaacc	420
tgtgactgcc	gcctcctctg	gctgctccgg	ctccgccacc	tggaactttg	catgtccccc	480
cctgcctgtg	ctggcccca	tcattgtccag	gggaagagcc	tgaaggagtt	ttcagacatc	540
ctgcctccag	ggcacttcac	ctgcaaacca	gccctgatcc	gaaagtgcgg	gcctcgatgg	600
gtcattgcag	aggaggggcg	gcatgcggtt	ttctcctgct	ctggagatgg	agaccagcc	660
cccactgtct	cctggatgag	gcctcatggg	gcttggctgg	gcagggtcgg	gagagtaagg	720
gtcctagagg	atgggacact	ggagatccgc	tcagtgcagc	tacgggacag	aggggcctat	780
gtctgtgtgg	ttagcaatgt	cgctgggaat	gactccctga	ggacctggct	ggaagtcatc	840
cagggtggaac	caccaaacgg	cacactttct	gaccccaaca	tcaccgtgcc	agggatccca	900
gggccttttt	ttctggatag	cagaggtgtg	gccatggtgc	tggcagtcgg	cttccctccc	960
ttcctcacct	cagtgacct	ctgctttggc	ctgattgccc	tttggagcaa	gggcaaaagt	1020
cgggtcaaac	atcacatgac	ctttgacttt	gtggcacctc	ggccctctgg	ggataaaaaa	1080
tctgggggta	accgggtcac	tgccaagctc	ttctga			1116

<210> 10

<211> 1779

<212> DNA

<213> Homo sapiens

<400> 10

atggatgcag	ccacagctcc	aaagcaagcc	tggcccccat	ggcccccgct	ccttttcttc	60
ctcctcctac	ctggagggag	cggtggcagc	tgccctgctg	tgtgtgactg	cacctcccag	120
ccccaggctg	tgctctgtgg	ccacaggcaa	ctggaggctg	tacctggagg	actcccactg	180
gacactgagc	tcctggacct	gagtgggaac	cgccctgtgg	ggctccagca	gggaatgctc	240
tcccgctga	gcctgtcca	ggaattggac	ctcagctaca	accagctctc	aaccttgtag	300
cctggggcct	tccatggcct	acaaagccta	ctcacctga	ggctgcaggg	caatcggtc	360

agaatcatgg	ggcctggggg	cttctcaggg	ctctctgctc	tgaccctgct	ggacctccgc	420
ctcaaccaga	ttgttctctt	cctagatgga	gcttttgggg	agctaggcag	cctccagaag	480
ctggagggtg	gggacaacca	cctgggtattt	gtggctccgg	gggcctttgc	agggctagcc	540
aagttgagca	ccctcaccct	ggagcgctgc	aacctcagca	cagtgcctgg	cctagccctt	600
gcccgtctcc	cggcactagt	ggccctaagg	cttagagaac	tggatattgg	gaggctgcca	660
gctggggccc	tgcgggggct	ggggcagctc	aaggagctgg	agatccacct	ctggccatct	720
ctggaggctc	tggaccctgg	gagcctgggt	gggctcaatc	tcagcagcct	ggccatcact	780
cgctgcaatc	tgagctcggt	gcccttccaa	gcaactgtacc	acctcagctt	cctcagggtc	840
ctggatctgt	cccagaatcc	catctcagcc	atcccagccc	gaaggctcag	ccccctgggtg	900
cggctccagg	agctacgcct	gtcaggggca	tgcctcacct	ccattgctgc	ccatgccttc	960
catggcttga	ctgccttcca	cctcctggat	gtggcagata	acgcccttca	gacactagag	1020
gaaacagctt	tcccttctcc	agacaaactg	gtcaccttga	ggctgtctgg	caacccccta	1080
acctgtgact	gccgcctcct	ctggctgctc	cggctccgcc	acctggactt	tggcatgtcc	1140
ccccctgctt	gtgctggccc	ccatcatgtc	caggggaaga	gcctgaagga	gttttcagac	1200
atcctgcctc	cagggcactt	cacctgcaaa	ccagccctga	tccgaaagtc	ggggcctcga	1260
tgggtcattg	cagaggaggg	cgggcatgcg	gttttctcct	gctctggaga	tggagacca	1320
gccccactg	tctcctggat	gaggcctcat	ggggcttggc	tgggcagggc	tgggagagta	1380
agggctcctag	aggatgggac	actggagatc	cgctcagtcg	agctacggga	cagagggggc	1440
tatgtctgtg	tggttagcaa	tgtcgttggg	aatgactccc	tgaggacctg	gctggaagtc	1500
atccaggtgg	aaccaccaa	cggcacactt	tctgacccca	acatcacctg	gccagggatc	1560
ccagggcctt	tttttctgga	tagcagaggt	gtggccatgg	tgtgtgcagt	cggcttctct	1620
cccttctctc	cctcagtgac	cctctgcttt	ggcctgattg	ccctttggag	caagggcaaa	1680
ggtcgggtca	aacatcacat	gacctttgac	tttgtggcac	ctcggccctc	tggggataaa	1740
aactctgggg	gtaaccgggt	cactgccaag	ctcttctga			1779

<210> 11

<211> 429

<212> DNA

<213> Homo sapiens

<400> 11

atggccaggt	acatgctgct	gctgctcctg	gcggtatggg	tgctgaccgg	ggagctgtgg	60
ccgggagctg	aggcccgggc	agcgccctac	ggggctcagc	tttgcgggcg	agaattcate	120
cgagcagtc	tcttcacctg	cgggggctcc	cgggtggagac	gatcagacat	cctggcccac	180
gaggctatgg	gagatacctt	cccggatgca	gatgctgatg	aagacagtct	ggcaggcgag	240
ctggatgagg	ccatggggtc	cagcgagtgg	ctggccctga	ccaagtcacc	ccaggccttt	300
tacagggggc	gaccagctg	gcaaggaacc	cctgggggtc	ttcggggcag	ccgagatgtc	360
ctggctggcc	tttccagcag	ctgctgcaag	tgggggtgta	gcaaaagtga	aatcagtagc	420
ctttgctag						429

<210> 12

<211> 692

<212> DNA

<213> Homo sapiens

<400> 12

atgtctgaag	aagtgacct	cgcgacactc	acatttcagg	attctgctgg	agcaaggaat	60
aaccgagatg	gaaataacct	aagaaaaaga	gggcatccag	ctccatctcc	catttggcgt	120
catgctgctc	tgggtctggg	aactctttgc	ctgatgttgc	tgattgggct	ggtgacgttg	180
gggatgatgt	ttttgcagat	atctaattgac	attaactcag	attcagagaa	attgagtcaa	240
cttcagaaaa	ccatccaaca	gcagcaggat	aacttatccc	agcaactggg	caactccaac	300
aacttgtcca	tggaggagga	atttctcaag	tcacagatct	ccagtctact	gaagaggcag	360
gaacaaatgg	ccatcaaaact	gtgccaagag	ctaatacttc	atacttcaga	ccacagatgt	420
aatccatgtc	ctaagatgtg	gcaatggtac	caaaatagtt	gctactatct	tacaacaaat	480
gaggagaaaa	cctgggctaa	cagtagaaag	gactgcatag	acaagaactc	caccctagtg	540
aagatagaca	gtttggaaga	aaaggatttt	cttatgtcac	agccattact	catgttttctg	600
ttcttttggc	tgggattatc	atgggactcc	tctggcagaa	gttgggttctg	ggaagatggc	660
tctgttccct	ctccatcctt	gtacgtctct	aa			692

<210> 13
 <211> 585
 <212> DNA
 <213> Homo sapiens

<400> 13
 atgtggctgt cccagctct gctgcttctc atcctcccag gttactccat tgccgctaaa 60
 atcactggct caacaacagt gaatggctcg gagcagggt cattgactgt gcagtgtgct 120
 tatggctcag gctgggagac ctacttgaag tggcggtgtc aaggagctga ttggaattac 180
 tgtaacatcc ttgttaaaac aaatggatca gagcaggagg taaagaagaa tcgagtttcc 240
 atcagggaca atcagaaaaa ccacatgttc accgtgacca tggagaatct caaaagagat 300
 gatgctgaca gttattgggt tgggactgag agacctggaa ttgatcttgg ggtcaaagtt 360
 caagtgacca ttaaccaggg cacacaaact gcagtctcag aatggacaac cacaacagca 420
 agcctggctt tcacagctgc agccacccag aagaccagca gccccctcac caggtccccg 480
 ctcaagagca cccacttctt gttcctgttc ctctggagc tgctctgtct cctgagcatg 540
 ctggggaccg tcctctgggt gaacagacca caaagaaggt ctgga 585

<210> 14
 <211> 1002
 <212> DNA
 <213> Homo sapiens

<400> 14
 atgaggatct ggtggcttct gcttgccatt gaaatctgca cagggaacat aaactcacag 60
 gacacctgca ggcaagggca ccctggaatc cctgggaacc ccggtcacia tggctctgct 120
 ggaagagatg gacgagacgg agcgaagggt gacaaaggcg atgcaggaga accaggacgt 180
 cctggcagcc cggggaagga tgggacgagt ggagagaagg gagaacgagg agcagatgga 240
 aaagttgaag caaaaggcat caaagggtgat caaggctcaa gaggatcccc aggaaaaacat 300
 ggccccaagg ggcttgagg gcccattgga gagaaggggc tccgaggaga gactgggctt 360
 caggggcaga aggggaataa ggggtgacgtg ggtcccactg gtcctgaggg gccaaagggc 420
 aacattgggc ctttgggccc aactggttta ccgggcccga tgggcccctat tggaaaagcct 480
 ggtcccaaag gagaagctgg acccagggg cccaggggtg agccaggagt ccggggaata 540
 agaggctgga aaggagatcg aggagagaaa gggaaaatcg gtgagactct agtcttgcca 600
 aaaagtgtt tctctgtggg gctcacgggt ctgagcaagt ttccttcttc agatatgccc 660
 attaaatttg ataagatcct gtataacgaa ttcaaccatt atgatacagc agcggggaaa 720
 ttcacgtgcc acattgctgg ggtctattac ttcacctacc acatcactgt tttctccaga 780
 aatgttcagg tgtctttggg caaaaatgga gtaaaaatac tgcacaccaa agatgcttac 840
 atgagctctg aggaccaggc ctctggcggc attgtctctg agctgaagct cggggatgag 900
 gtgtggctcg aggtgacagg aggagagagg ttcaatggct tgtttgctga tgaggacgat 960
 gacacaactt tcacagggtt ccttctgttc agcagcccg ga 1002

<210> 15
 <211> 678
 <212> DNA
 <213> Homo sapiens

<400> 15
 atgaggatct ggtggcttct gcttgccatt gaaatctgca cagggaacat aaactcacag 60
 gacacctgca ggcaagggca ccctggaatc cctgggaacc ccggtcacia tggctctgct 120
 ggaagagatg gacgagacgg agcgaagggt gacaaaggcg atgcaggaga agctggaccc 180
 acggggcccc aggtgagacc aggagtcagg ggaataagag gctggaaaagg agatcgagga 240
 gagaaaggga aaatcggtga gactctagtc ttgcaaaaaa gtgctttcac tgtggggctc 300
 acggtgctga gcaagtttcc ttcttcagat atgcccatta aatttgataa gatcctgtat 360
 aacgaattca accattatga tacagcagcg gggaaattca cgtgccacat tgcgtgggtc 420
 tattacttca cctaccacat cactgttttc tccagaaatg ttcagggtgtc tttgggtcaa 480
 aatggagtaa aaatactgca caccaaagat gcttacatga gctctgagga ccaggcctct 540
 ggcggcattg tctgcagct gaagctcggg gatgaggtgt ggctgcagggt gacaggagga 600
 gagaggttca atggcttgtt tgctgatgag gacgatgaca caactttcac agggttcctt 660
 ctgttcagca gcccgatga 678

<210> 16
 <211> 618
 <212> DNA
 <213> Homo sapiens

<400> 16
 atgatgagaa ctctcatcac cacacaccca ctgcccctgc ttctattgce gcagcagctg 60
 ctgcagctgg tgcagtttca agagggtgat acagattttg atttcccaga agaagataaa 120
 aaagaagaat ttgaagagtg tttggaaaaa ttttttagta cagggcccg cagaccacct 180
 accaaagaaa aagtcaaaag acgtgtcctt attgaacctg gaatgccact aaatcatata 240
 gagtactgta accatgaaat catgggaaaa aatgtttact acaaacaccg ttgggtggca 300
 gaacattact tccttcttat gcaatatgac gagctccaaa aaatctgtta caacagattt 360
 gtgccatgta agaattggaat taggaaatgt aacaggagca aaggctctgt agaaggagtg 420
 tattgtaatt taacagaagc atttgaaata ccagcgtgta aatacgaatc actttatagg 480
 aagggtctacg tccttatcac ttgttcattg caaaatgaaa tgcaaaaacg ttttctcat 540
 actataaatg atctcgtgga gccacctgaa cacagaagtt tcctcagtga ggatggtgac 600
 tttgtcatat cgccctag 618

<210> 17
 <211> 288
 <212> DNA
 <213> Homo sapiens

<400> 17
 atggagggtg tgctgatctt tctatgcagc ctgttggccc acattgtcct ggccgatgca 60
 gttgagaggg agaagcaaat tgacctttt cattatgact accagacct gaggattagg 120
 ggggttggtat gtgctgtggt cctctctccc attgggatcc tccttatact aggttgcaga 180
 tgcaagtgca gtttcaatca gaagcccagg accccaggag aggaggaagc ccagggtggag 240
 aacctcatca ctgcaaatgc aacaaagctc cagaaagcag agagctga 288

<210> 18
 <211> 1788
 <212> DNA
 <213> Homo sapiens

<400> 18
 atggagggtg gaatgggatg ctggggcccg gaggtgctgg tccccgaggg gcccttgtac 60
 cgctggtgctg gcacagctgt ctccatctcc tgcaatgtga ccggctatga gggccctgcc 120
 cagcagaact tgcagtgggt cctgtatagg ccgaggccc cagatactgc actgggcatt 180
 gtcagtacca aggataccca gttctctcat gctgtcttca agtcccagat ggtggcgggt 240
 gaggtgcagg tgcagcgcct acaagggtgat gccgtggtgc tcaagattgc ccgcctgcag 300
 gcccaggatg ccggcattta tgagtgcac acccctcca ctgatacccg ctacctgggc 360
 agctacagcg gcaagggtga gctgagagtt ctccagatg tcctccaggt gtctgtgcc 420
 cccccagggc ccgaggccg ccaggcccca acctacccc cagcatgac ggtgcatgag 480
 gggcaggagc tggcactggg ctgcctggcg aggacaagca cacagaagca cacacacctg 540
 gcagtgtcct ttgggcgatc tgtgcccag gcaccagttg ggcggtcaac tctgcaggaa 600
 gtggtgggaa tccggtcaga cttggccgtg gaggtggtg ctccctatgc tgagcgattg 660
 gctgcagggg agcttcgtct gggcaaggaa gggaccgat ggtaccgat ggtagtaggg 720
 ggtgcccagg caggggacgc aggcacctac cactgcactg ccgctgagt gattcaggat 780
 cctgatggca gctgggcccga gattgcagag aaaagggccg tcctggccca cgtggatgtg 840
 cagacgctgt ccagccagct ggcagtgaca gtggggcctg gtgaacgtcg gatcgccca 900
 ggggagccct tggaaactgct gtgcaatgtg tcaggggcac ttccccagc aggcctcat 960
 gctgcatact ctgtagggtg ggagatggca cctgcggggc acctggggcc cggccgctg 1020
 gtagccagc tggacacaga ggtgtgggc agcctgggccc ctggctatga gggccgacac 1080
 attgccatgg agaagggtggc atccagaaca taccggctac ggctagaggc tgcaggcct 1140
 ggtgatgcgg gcacctaccg ctgcctcgcc aaagcctatg ttcgagggtc tgggaccggg 1200
 ctctgtgaag cagccagtgc ccgttcccgg cctctccctg tacatgtgcg ggaggaaggt 1260
 gtggtgctgg aggctgtggc atggctagca ggaggcacag tgtaccgagg ggagactgcc 1320
 tcctgtctgt gcaacatctc tgtgcggggg gggcccccag gactgagggt ggccgcccag 1380

tggtgggtgg	agcgaccaga	ggacggagag	ctcagctctg	tccctgcccc	gctgggtgggt	1440
ggcgtaggcc	aggatgggtg	ggcagagctg	ggagtcgggc	ctggaggagg	ccctgtcagc	1500
gtagagctgg	tggtggcccc	aagccatcgg	ctgagaactac	acagcttggg	gccccaggat	1560
gaaggcgtgt	accactgtgc	ccccagcgcc	tggtgtgcagc	atgccgacta	cagctggtac	1620
caggcgggca	gtgcccgtc	agggcctgtt	acagtctacc	cctacatgca	tgccctggac	1680
accctatattg	tgctctctgt	ggtgggtaca	gggggtggccc	tagtcactgg	tgccactgtc	1740
cttgggtacca	tcacttctgt	cttcatgaag	aggcttcgaa	aacggtga		1788

<210> 19

<211> 1842

<212> DNA

<213> Homo sapiens

<400> 19

atggggcgccc	tcaggccccac	gctgctgccc	ccttcgctgc	cgtctgtctg	gctgctaattg	60
ctaggaatgg	gatgctgggc	ccgggaggtg	ctgggtcccc	aggggcccctt	gtaccgcgtg	120
gctggcacag	ctgtctccat	ctcctgcaat	gtgaccggct	atgaggggccc	tgcccagcag	180
aacttcgagt	ggttcctgta	tagggccgag	gccccagata	ctgcaactggg	cattgtcagt	240
accaaggata	cccagttctc	ctatgctgtc	ttcaagtccc	gagtgggtggc	gggtgaggtg	300
cagggtgcagc	gcctacaagg	tgatgccgtg	gtgctcaaga	ttgcccgcct	gcaggccag	360
gatgccggca	tttatgagtg	ccacaccccc	tccactgata	cccgtctacct	gggcagctac	420
agcggcaagg	tgagctgag	agttcttcca	gatgtcctcc	aggtgtctgc	tgccccccca	480
ggggccccgag	gcccgcaggc	cccaacctca	ccccacgcga	tgacgggtgca	tgaggggcag	540
gagctggcac	tggtctgcct	ggcgaggaca	agcacacaga	agcacacaca	cctggcagtg	600
tcctttgggc	gatctgtgcc	cgaggcacca	gttgggcggt	caactctgca	ggaagtgggtg	660
ggaatccggt	cagacttggc	cgtggaggct	ggagctccct	atgctgagcg	attggctgca	720
ggggagcttc	gtctgggcaa	ggaagggacc	gatcggtacc	gcatggtagt	aggggggtgcc	780
caggcagggg	acgcaggcac	ctaccactgc	actgccgctg	agtggattca	ggatcctgat	840
ggcagctggg	cccagattgc	agagaaaagg	gcgctccttg	cccacgtgga	tgtgcagacg	900
ctgtccagcc	agctggcagt	gacagtgggg	cctggtgaac	gtcggatcgg	cccaggggag	960
cccttggaa	tgctgtgcaa	tgtgtcaggg	gcacttcccc	cagcaggccg	tcattgctgca	1020
tactctgtat	gttgggagat	ggcacctgcg	ggggcacctg	ggcccggccg	cctggtagcc	1080
cagctggaca	cagaggggtg	gggcagcctg	ggccctggct	atgaggggccg	acacattgcc	1140
atggagaagg	tggtcatccag	aacataccgg	ctacggctag	aggctgccag	gcctgggtgat	1200
gcgggcacct	accgtgcct	cgccaaagcc	tatgttccag	ggtctgggac	ccggcttcgt	1260
gaagcagcca	gtgcccgctc	ccggcctctc	cctgtacatg	tgccgggagga	aggtgtgggtg	1320
ctggaggctg	tggtcatggct	agcaggaggc	acagtgtacc	gcgggggagac	tgccctccctg	1380
ctgtgcaaca	tctctgtgcg	gggtggcccc	ccaggactgc	ggctggccgc	cagctgggtg	1440
gtggagcgac	cagaggacgg	agagctcagc	tctgtccctg	cccagctggg	gggtggcgta	1500
ggccaggatg	gtgtggcaga	gctgggagtc	cggcctggag	gaggccctgt	cagcgtagag	1560
ctggtggggc	cccgaagcca	tcggctgaga	ctacacagct	tgggggccga	ggaatgaaggc	1620
gtgtaccact	gtgccccag	cgctgggtg	cagcatgccg	actacagctg	gtaccaggcg	1680
ggcagtggcc	gctcaggggc	tgttacagtc	tacccttaca	tgcatgccct	ggacacccta	1740
tttgtgcctc	tgctgggtgg	tacaggggtg	gccctagtca	ctggtgccac	tgtccttgggt	1800
accatcactt	gctgcttcat	gaagaggctt	cgaaaacggt	ga		1842

<210> 20

<211> 1791

<212> DNA

<213> Homo sapiens

<400> 20

atggccgcca	actccaccag	cgacctccac	actcccggga	cgcagctgag	cgtgggtgac	60
atcatcgtca	tcactgtgta	ttttgctctg	aacgtggccg	tgggcatatg	gtcctcttgt	120
cgggcccagta	ggaacacggg	gaatggctac	ttcctggcag	gccgggacat	gacgtgggtg	180
ccgattggag	cctccctctt	cgccagcagc	gagggctctg	gcctcttcat	tggaactggcg	240
ggctcaggcg	cggcaggagg	tctggccgtg	gcaggcttcg	agtggaaatgc	cacgtacgtg	300
ctgctggcac	tggtcatggg	gttcgtgccc	atctacatct	cctcagagat	cgtcacctta	360
cctgagtaca	ttcagaagcg	ctacgggggc	cagcggatcc	gcatgtacct	gtctgtcctg	420

tccctgctac	tgtctgtctt	caccaagata	tcgctggacc	tgtacgcg	ggctctgttt	480
gtgcacatct	gcctgggctg	gaactttctac	ctctccacca	tcctcacgct	cggcatcaca	540
gccctgtaca	ccatcgagg	gggcctggct	gctgtaatct	acacggacgc	cctgcagacg	600
ctcatcatgg	tgggtggggc	tgtcatcctg	acaatcaaag	cttttgacca	gatcgggtgg	660
tacgggcagc	tggaggcagc	ctacgcccag	gccattccct	ccaggaccat	tgccaacacc	720
acctgccacc	tgccacgtac	agacgccatg	cacatgtttc	gagacccccca	cacaggggac	780
ctgccgtgga	cggggatgac	ctttggcctg	accatcatgg	ccacctggta	ctggtgcacc	840
gaccaggtca	tcgtgcagcg	atcaactgtca	gcccgggacc	tgaacctatgc	caaggcgggc	900
tccatcctgg	ccagctacct	caagatgttc	cccatgggcc	tgatcataat	gccggggcatg	960
atcagccgcg	cattgttccc	agatgatgtg	ggctgcgtgg	tgcggtccga	gtgcctgcgg	1020
gcctgcgggg	cggaggtcgg	ctgctccaac	atcgccatcc	ccaagctggg	catggaactg	1080
atgcccatcg	gtctgcgggg	gctgatgatc	gcagtgatgc	tggcggcgct	catgtcgtcg	1140
ctgacctcca	tcttcaacag	cagcagcacc	ctcttacta	tggacatctg	gaggcggctg	1200
cgtccccgct	cggcgagcg	ggagctcctg	ctgggtgggac	ggctgggtcat	agtggcactc	1260
atcggcgtga	gtgtggcctg	gatccccctc	ctgcaggact	ccaacagcgg	gcaactcttc	1320
atctacatgc	agtcagtgc	cagctccctg	gccccaccag	tgactgcagt	ctttgtctctg	1380
ggcgtcttct	ggcgacgtgc	caacgagcag	ggggccttct	ggggcctgat	agcagggtctg	1440
gtgggtgggg	ccacgaggct	ggtcctggaa	tctctgaacc	cagccccacc	gtgcggagag	1500
ccagacacgc	ggccagccgt	cctggggagc	atccactacc	tgcacttcgc	tgctgccttc	1560
tttgactca	gtgggtgctg	tgtgggtggt	ggaagcctgc	tgacccccacc	cccacagagt	1620
gtccagattg	agaaccttac	ctgggtggacc	ctggctcagg	atgtgccctt	gggaactaaa	1680
gcagggtgatg	gccaacacac	ccagaaacac	gccttctggg	cccgtgtctg	tggcttcaat	1740
gccatcctcc	tcattgtgtg	caacatattc	ttttatgcct	acttcgcctg	a	1791

<210> 21

<211> 1182

<212> DNA

<213> Homo sapiens

<400> 21

atggattcct	taaagaatga	gaactatgat	ctgggtatttg	ttgaagcatt	tgattttctgt	60
tctttcctga	ttgctgagaa	gcttgtgaaa	ccattttgtg	ccattcttcc	caccacattc	120
ggctcttttg	attttgggct	accaagcccc	ttgtcttatg	ttccagtatt	cccttccttg	180
ctgactgatc	acatggactt	ctggggccga	gtgaagaatt	ttctgatgtt	ctttagtctc	240
tccaggagcc	aatgggacat	gcagtctaca	tttgacaaca	ccatcaagga	gcatttccca	300
gaaggctcta	ggccagtttt	gtctcatctt	ctactgaaag	cagagtgtgtg	gtttgttaac	360
tctgattttg	cctttgattt	tgccccggcc	ctgcttccca	acactgttta	tattggaggc	420
ttgatggaaa	aacctattaa	accagtacca	caagacttgg	acaacttcat	tgccaacttt	480
ggggatgcag	ggtttgtcct	tgtggccttt	ggctccatgt	tgaacacca	tcagtcccag	540
gaagtcctca	agaagatgca	caatgccttt	gccacctcc	ctcaaggagt	gatattggaca	600
tgtcagagtt	ctcattggcc	cagagatgtt	catttggcca	caaattgtga	aattgtggac	660
tggcttcttc	agagtgcact	cctggctcac	cccagcatcc	gtctttttgt	cactcatggt	720
gggcagaaca	gcgtaatgga	ggccatccgt	catggtgtgc	ccatgggtggg	attaccagtc	780
aatggagacc	agcatggaaa	catggtccga	gtagtagcca	aaaattatgg	tgtctctatc	840
cggttgaatc	aggtcacagc	cgacacactg	acacttaaa	tgaacaagt	catagaagac	900
aagaggtaca	agtcggcagt	ggtggcagcc	agtgtcatcc	tgcactctca	gcccctgagc	960
cccgcacagc	ggctgggtggg	ctggatcgac	cacatcctcc	agactggggg	agcgacgcac	1020
ctcaagccct	atgccttcca	gcagccttgg	catgagcagt	acctcattga	tgtctttgtg	1080
tttctgctgg	ggctcactct	gggcactatg	tggctttgtg	ggaagctgct	gggtgtgggtg	1140
gccagggtggc	tgcgtggggc	caggaaggtg	aagaagacat	ga		1182

<210> 22

<211> 1572

<212> DNA

<213> Homo sapiens

<400> 22

atgggtgggc	agcgggtgct	gcttctagtg	gccttccctc	tttctggggg	cctgctctca	60
gaggctgcca	aaatcctgac	aatatctaca	ctgggtggaa	gccattacct	actgttggac	120

cggtgtgtc	agattcttca	agagcatggt	cataatgtga	ctatgcttca	tcagagtgga	180
aagtttttga	tcccagatat	taaagaggag	gaaaaatcat	accaagttat	caggtgggtt	240
tcacctgaag	atcatcaaaa	aagaattaag	aagcattttg	atagctacat	agaaacagca	300
ttggatggca	gaaaagaatc	tgaagccctt	gtaaagctaa	tggaaatatt	tgggactcaa	360
tgtagtatt	tgctaagcag	aaaggatata	atggattcct	taaagaatga	gaactatgat	420
ctggtatttg	ttgaagcatt	tgatttctgt	tctttcctga	ttgctgagaa	gcttgtgaaa	480
ccatttgtgg	ccattcttcc	caccacattc	ggctctttgg	attttgggct	accaagcccc	540
ttgtcttatg	ttccagtatt	cccttccttg	ctgactgac	acatggactt	ctggggcgga	600
gtgaagaatt	ttctgatggt	cttttagttc	tccaggagcc	aatgggacat	gcagtctaca	660
tttgacaaca	ccatcaagga	gcatttccca	gaaggctcta	ggccagtttt	gtctcatctt	720
ctactgaaag	cagagtgtg	gtttgttaac	tctgattttg	cctttgattt	tgcccggccc	780
ctgcttccca	acactgttta	tattggaggc	ttgatggaaa	aacctattaa	accagtacca	840
caagacttgg	acaacttcat	tgccaacttt	ggggatgcag	ggtttgtcct	tgtggccttt	900
ggctccatgt	tgaacaccca	tcagtcccag	gaagtcctca	agaagatgca	caatgccttt	960
gcccacctcc	ctcaaggagt	gatatggaca	tgctcagagt	ctcattggcc	cagagatggt	1020
catttggcca	caaagtga	aattgtggac	tggtctcctc	agagtgcact	cctggctcac	1080
cccagcatcc	gtctttttgt	cactcatggt	gggcagaaca	gcgtaatgga	ggccatccgt	1140
catggtgtgc	ccatggtggg	attaccagtc	aatggagacc	agcatggaaa	catggtccga	1200
gtagtagcca	aaaattatgg	tgtctctatc	cggttgaatc	aggtcacagc	cgacacactg	1260
acacttacaa	tgaacaagt	catagaagac	aagaggtaca	agtcggcagt	ggtggcagcc	1320
agtgtcatcc	tgcactctca	gcccctgagc	ccgcacagc	ggctgggtgg	ctggatcgac	1380
cacatcctcc	agactggggg	agcgacgcac	ctcaagccct	atgccttcca	gcagccttgg	1440
catgagcagt	acctcattga	tgtctttgtg	tttctgctgg	ggctcactct	gggactatg	1500
tggctttgtg	ggaagctgct	gggtgtggtg	gccaggtggc	tgcgtggggc	caggaaggtg	1560
aagaagacat	ga					1572

<210> 23

<211> 759

<212> DNA

<213> Homo sapiens

<400> 23

atgagctgcg	tcctgggtgg	tgtcatcccc	ttggggctgc	tgttcctggt	ctgcggatcc	60
caaggctacc	tcctgcccac	cgctactctc	ttagaggagc	tgctcagcaa	ataccagcac	120
aacgagtctc	actccgggt	ccgcagagcc	atccccagg	aggacaagga	ggagatcctc	180
atgctgcaca	acaagcttcg	gggccagggtg	cagcctcagg	cctccaacat	ggagtacatg	240
acctgggatg	acgaactgga	gaagtctgct	gcagcgtggg	ccagtcagtg	catctgggag	300
cacggggcca	ccagtctgct	ggtgtccatc	gggcagaacc	tgggcgctca	ctggggcagg	360
tatcgctctc	cggggttcca	tgtgcagtcc	tggtatgacg	aggtgaagga	ctacacctac	420
ccctaccgga	gcgagtgcac	cccctggtgt	ccagagaggt	gctcggggcc	catgtgcacg	480
cactacacac	agatagtatt	ggccaccacc	aacaagatcg	gttgtgctgt	gaacacctgc	540
cggaagatga	ctgtctgggg	agaagtttgg	gagaacgcgg	tctactttgt	ctgcaattat	600
tctccaaagg	ggaactggat	tggagaagcc	ccctacaaga	atggccggcc	ctgctctgag	660
tgccaccca	gctatggagg	cagctgcagg	aacaacttgt	gttaccgagg	taggaaattt	720
actcccaaca	cttttgcaat	gaatttgccc	tcagtctga			759

<210> 24

<211> 1494

<212> DNA

<213> Homo sapiens

<400> 24

atgagctgcg	tcctgggtgg	tgtcatcccc	ttggggctgc	tgttcctggt	ctgcggatcc	60
caaggctacc	tcctgcccac	cgctactctc	ttagaggagc	tgctcagcaa	ataccagcac	120
aacgagtctc	actccgggt	ccgcagagcc	atccccagg	aggacaagga	ggagatcctc	180
atgctgcaca	acaagcttcg	gggccagggtg	cagcctcagg	cctccaacat	ggagtacatg	240
acctgggatg	acgaactgga	gaagtctgct	gcagcgtggg	ccagtcagtg	catctgggag	300
cacggggcca	ccagtctgct	ggtgtccatc	gggcagaacc	tgggcgctca	ctggggcagg	360
tatcgctctc	cggggttcca	tgtgcagtcc	tggtatgacg	aggtgaagga	ctacacctac	420

ccctacccga	gcgagtgcaa	cccctggtgt	ccagagaggt	gctcggggcc	catgtgcacg	480
cactacacac	agatagtgtg	ggccaccacc	aacaagatcg	gttgtgctgt	gaacacctgc	540
cggaagatga	ctgtctgggg	agaagtttgg	gagaacgcgg	tctactttgt	ctgcaattat	600
tctccaaagg	ggaactggat	tggagaagcc	ccctacaaga	atggccggcc	ctgctctgag	660
tgccaccca	gctatggagg	cagctgcagg	aacaacttgt	gttaccgaga	agaaacctac	720
actccaaaac	ctgaaacgga	cgagatgaat	gaggtggaaa	cggtcccat	tcctgaagaa	780
aacctgtttt	ggctccaacc	gaggtgtatg	agaccaccca	agcccaagaa	aacctctgcg	840
gtcaactaca	tgaccaagt	cgtcagatgt	gacaccaaga	tgaaggacag	gtgcaaaggg	900
tccacgtgta	acaggtacca	gtgccagca	ggctgcctga	accacaaggc	gaagatcttt	960
ggaactctgt	tctatgaaag	ctcgtctagc	atatgcgcg	ccgccatcca	ctacgggatc	1020
ctggatgaca	agggaggcct	ggtggatata	accaggaacg	ggaaggctcc	cttctctctg	1080
aagtctgaga	gacacggcgt	gcagtccttc	agcaaatata	aaccttccag	ctcattcatg	1140
gtgtcaaaag	tgaagtga	ggatttgac	tgctacacga	ccgttgctca	gctgtgcccg	1200
tttgaaaagc	cagcaactca	ctgcccaaga	atccattgtc	cggcacactg	caaagacgaa	1260
ccttcctact	gggtccgggt	gtttggaacc	aacatctatg	cagataacct	aagcatctgc	1320
aagacagccg	tgacgcggg	agtcacgag	aacgagagtg	ggggtgacgt	ggacgtgatg	1380
ccgtgggata	aaaagaagac	ctacgtgggc	tcgctcagga	atggagtcca	gtctgaaagc	1440
ctgggggactc	ctcgggatgg	aaaggccttc	cggatctttg	ctgtcaggca	gtga	1494

<210> 25

<211> 1315

<212> DNA

<213> Homo sapiens

<400> 25

batgctgcac	aacaagcttc	ggggccaggt	gcagcctcag	gcctccaaca	tggagtacat	60
gacctgggat	gacgaactgg	agaagtctgc	tgacgcgtgg	gccagtcagt	gcatctggga	120
gcacggggccc	accagtctgc	tgtgtccat	cgggcagaaac	ctgggcgctc	actggggcag	180
gtatcgctct	ccgggggttc	atgtgcagtc	ctggtatgac	gaggtgaagg	actacacctta	240
cccctaccg	agcgagtga	ccccctggtg	tccagagagg	tgctcggggc	ccatgtgcac	300
gcactacaca	cagatagtgt	gggccaccac	caacaagatc	ggttgtgctg	tgaacacctg	360
ccggaagatg	actgtctggg	gagaagtgtg	ggagaacgcg	gtctactttg	tctgcaatta	420
ttctccaaag	gggaactgga	ttggagaagc	cccctacaag	aatggccggc	cctgctctga	480
gtgcccaccc	agctatggag	gcagctgcag	gaacaacttg	tgttaccgag	aagaaacctta	540
cactccaaaa	cctgaaacgg	acgagatgaa	tgaggtggaa	acggctccca	ttcctgaaga	600
aaacctatgt	tggtcccaac	cgaggggtgat	gagacccacc	aagcccaaga	aaacctctgc	660
ggtcaactac	atgaccaag	tcgtcagatg	tgacaccaag	atgaaggaca	ggtgcaaagg	720
gtccacgtgt	aacaggtacc	agtgccacgc	aggtgcctg	aaccacaagg	cgaagatctt	780
tggaaactctg	ttctatgaaa	gctcgtctag	catatgcgcg	ccgccatcc	actacgggat	840
cctggatgac	aagggaggcc	tggtggatat	caccaggaac	gggaaggctc	ccttctctgt	900
gaagtctgag	agacacggcg	tgacgtccct	cagcaaatata	aaaccttcca	gctcattcat	960
ggtgtcaaaa	gtgaaagtgc	aggatttgga	ctgctacacg	accgttgctc	agctgtgccc	1020
gtttgaaaag	ccagcaactc	actgcccaag	aatccattgt	ccggcacact	gcaaagacga	1080
accttctac	tgggtcccg	tggttggaac	caacatctat	gcagataacct	caagcatctg	1140
caagacagcc	gtgcacgcgg	gagtcacgag	caacgagagt	gggggtgacg	tggacgtgat	1200
gcccgtggat	aaaaagaaga	cctacgtggg	ctcgtcagg	aatggagtcc	agtctgaaag	1260
cctgggggact	cctcgggatg	gaaaggcctt	ccggatcttt	gctgtcaggc	agtga	1315

<210> 26

<211> 927

<212> DNA

<213> Homo sapiens

<400> 26

atggttgggg	gcgtcctcgc	ctcgtctggc	ttcgtcttct	cggctttcgc	cagcgatctg	60
ctgcatctct	acctcggcct	gggcctctc	gctggctttg	gttgggccc	ggtgttcgcc	120
cccgccctag	gcacctctc	gcgttacttc	tcccgccgct	gagtcctggc	ggtggggctg	180
gcgtcacccg	gcaacggggc	ctcctcgtct	ctcctggcgc	ccgccttgca	gcttcttctc	240
gatactttcg	gctggcgggg	cgctctgctc	ctcctcggcg	cgatcaccct	ccacctcacc	300

ccctgtggcg	ccctgtgtgt	acccctggtc	cttctctggag	acccccagc	cccaccggt	360
agtcccctag	ctgccctcgg	cctgagtcgt	ttcacacgcc	gggccttctc	aatcttttgt	420
ctaggcacag	ccctggttgg	gggcgggtac	ttcgttcctt	acgtgcactt	ggctccccac	480
gcttttagacc	ggggcctggg	gggatacggg	gcagcgtcgt	tgggtggcgt	ggctgcgatg	540
ggggatgcgg	gcgcccggct	ggtctgcggg	tggctggcag	accaaggctg	ggtgcccctc	600
ccgcggtctg	tggccgtatt	cggggctctg	actgggctgg	ggctgtgggt	ggtggggctg	660
gtgcccgtgg	tgggcggcga	agagagctgg	gggggtcccc	tgctggccgc	ggctgtggcc	720
tatgggctga	gcgcggggag	ttacgccccg	ctggttttcg	gtgtactccc	cgggctggtg	780
ggcgctggag	gtgtggtgca	ggccacaggg	ctgggtgatga	tgctgatgag	cctcgggggg	840
ctcctggggc	ctccccgtgc	aggtaaggac	ctgagctcac	agatctgcct	acaactatcc	900
tctgcccctg	gggttcgagg	cttctaa				927

<210> 27

<211> 1344

<212> DNA

<213> Homo sapiens

<400> 27

atgaccccc	agcccgccgg	acccccggat	gggggctggg	gctgggtggg	ggcgcccgca	60
gccttcgcga	taaacgggct	gtcctacggg	ctgctgcgct	cgctgggcct	tgcctccct	120
gaccttgccg	agcactttga	ccgaagcgcc	caggacactg	cgtaggatcag	cgccctggcc	180
ctggcgtg	agcaggcagc	cagccccgtg	ggcagcgccc	tgagcacg	ctggggggcc	240
cgccccgtgg	tgatggttgg	gggcgtcctc	gcctcgctgg	gcttcgtctt	ctcggtttc	300
gcccagcgtc	tgtgcatct	ctacctcggc	ctgggcctcc	tcgctggctt	tggttggg	360
ctgggtgttcg	cccccgccct	aggcacccctc	tcgctgtact	tctcccgccg	tcgagtcttg	420
gcgggtggggc	tggcgctcac	cggcaacggg	gcctcctcgc	tgtcctggc	gcccgccttg	480
cagcttcttc	tcgatacttt	cggctggcgg	ggcgctctgc	tcctcctcgg	cgcgatcacc	540
ctccacctca	cccctgttgg	cgccctgctg	ctaccctcgg	tccttccttg	agacccccca	600
gccccaccgc	gtagtccct	agctgcctc	ggcctgagtc	tgttcacacg	ccgggccttc	660
tcaatctttg	ctctaggcac	agccctggtt	ggggcggggt	acttcgttcc	ttacgtgcac	720
ttggctcccc	acgctttaga	cggggcgctg	gggggatacg	gagcagcgct	ggtgtggcc	780
gtggctgcga	tgggggatgc	gggcggccgg	ctgggtctgcg	ggtggctggc	agaccaaggc	840
tgggtgcccc	tcccgcggct	gctggccgta	ttcggggctc	tgactgggct	ggggctgtgg	900
gtgggtggggc	tgggtcccgt	ggtgggcggc	gaagagagct	gggggggtcc	cctgctggcc	960
gcggctgttg	cctatgggct	gagcgcgggg	agttacgccc	cgctgggtttt	cggtgtactc	1020
cccgggcttg	tgggcgtcgg	agggtgtgtg	caggccacag	ggctgggtgat	gatgctgatg	1080
agcctcgggg	ggctcctggg	ccctccccctg	tcaggcttcc	taagggtatga	gacaggagac	1140
ttcacgcctc	ctttcctcct	gtctggttct	ttgatcctct	cgggcagctt	catctacata	1200
gggttgccca	gggcgtgccc	ctcctgtggt	ccagcctccc	ctccagccac	gcctccccca	1260
gagacggggg	agctgcttcc	cgctccccag	gcagtccttg	tgtccccagg	aggccctggc	1320
tccactctgg	acaccacttg	ttga				1344

<210> 28

<211> 1375

<212> DNA

<213> Homo sapiens

<400> 28

batggcgcg	aggacagagc	cccccgacgg	gggctgggga	tgggtgggtg	tgctctcagc	60
gttcttccag	tcggcgcttg	tgtttggggg	gtcccgctcc	tttgggggtc	tcttcgtgga	120
gtttgtggcg	gcgtttgagg	agcaggcagc	gcgcgtctcc	tggatcgcc	ccataggaat	180
cgcggtgcag	cagttttggga	gcccggtagg	cagtgcctg	agcacgaagt	tcggggccag	240
gcccgtgggtg	atgactggag	gcactctggc	tcgctggggg	atgctgctcg	cctcttttgc	300
tacttctctg	acccacctat	acctgagtat	tgggttgctg	tcaggctctg	gctgggcttt	360
gaccttcgct	ccgacctgg	cctgcctgtc	ctgttatttc	tctcgccgac	gatccctggc	420
caccgggctg	gcactgacag	gcgtgggcct	ctcctccttc	acatttgccc	cctttttcca	480
gtggctgctc	agccactacg	cctggagggg	gtccctgctg	ctgggtgtctg	cctctccct	540
ccacctagtg	gcctgtgggtg	ctctcctccg	cccacctcc	ctggctgagg	accctgctgt	600
gggtgggtccc	agggcccaac	tcacctctct	cctccatcat	ggcccttcc	tccgttacac	660

tggtgcccctc	accctgatca	acactggcta	cttcattccc	tacctccacc	tggtggccca	720
tctccaggac	ctggattggg	accactacc	tgctgccttc	ctactctcag	ttgttgctat	780
ttctgacctc	gtggggcggtg	tggtctccgg	atggctggga	gatgcagtcc	cagggcctgt	840
gacacgactc	ctgatgctct	ggaccaacctt	gactgggggtg	tcactagccc	tgttccctgt	900
agctcaggct	cccacagccc	tggtggtctct	ggctgtggcc	tacggcttca	catcaggggc	960
tctggcccca	ctggccttct	ccgtgctgcc	tgaactaata	gggactagaa	ggatttactg	1020
tggcctggga	ctgttgcgaga	tgatagagag	catcgggggg	ctgctggggc	ctctctctc	1080
aggctacctc	cgggatgtgt	caggcaacta	cacggcttct	tttgtgggtg	ctggggcctt	1140
ccttctttca	gggagtggca	ttctcctcac	cctgccccac	ttcttctgct	tctcaactac	1200
tacctccggg	cctcaggacc	ttgtaacaga	agcactagat	actaaagttc	ccctacccaa	1260
ggaggggctg	gaaggaggac	tgaactccac	agagtcagge	ccagaaagcc	aaagcttgac	1320
agctccaggt	cttctcttgc	cacgtcttgg	tctccacaga	accacagtgc	cttaa	1375

<210> 29

<211> 510

<212> DNA

<213> Homo sapiens

<400> 29

atgaccatga	agacctctgg	ggccacttgt	gatgcaaaca	gtgtgatgaa	ctgcgggatc	60
cgcgggtctg	aaatgtttgc	tgagatggat	ttgagggcca	taaaacctta	ccagactctg	120
atcaaaaaag	tcgggcagag	acattgcgtg	gaccctgctg	tcacgcagc	catcatctcc	180
agggaaagcc	atgggggatc	tgtcctgcaa	gacggctggg	accacagggg	acttaaattt	240
ggcttgatgc	agcttgataa	acaaacgtac	cacctgtcgt	gtgcctggga	tagcaaagag	300
cacctttcac	aggctactgg	gattctaaca	gagagaatta	aggcaatcca	gaaaaaatc	360
cccacgtgga	gtgttgctca	gcacctcaaa	ggtggtctct	cagcttttaa	gtcaggaatt	420
gaagcgattg	ccaccccatc	ggacatagac	aatgacttcg	tcaatgatat	cattgctcga	480
gctaagttct	ataaaagaca	aagcttctag				510

<210> 30

<211> 561

<212> DNA

<213> Homo sapiens

<400> 30

atgaagcctc	acctacatcc	acgcctgtac	cacggctgct	atggggacat	catgaccatg	60
aagacctctg	gggccacttg	tgatgcaaac	agtgtgatga	actgcgggat	ccgcgggtct	120
gaaatgtttg	ctgagatgga	tttgagggcc	ataaaacctt	accagactct	gatcaaaaaa	180
gtcgggcaga	gacattgcgt	ggacctgct	gtcatcgag	ccatcatctc	cagggaaagc	240
catgggggat	ctgtcctgca	agacggctgg	gaccacaggg	gacttaaatt	tggttgatg	300
cagcttgata	aacaaacgta	ccacctgtc	ggtgcctggg	atagcaaaga	gcacctttca	360
caggctactg	ggattctaac	agagagaatt	aaggcaatcc	agaaaaaatt	ccccacgtgg	420
agtgttgctc	agcacctcaa	aggtgggtctc	tcagctttta	agtcaggaat	tgaagcgatt	480
gccaccccat	cggacataga	caatgacttc	gtcaatgata	tcattgctcg	agctaagttc	540
tataaaagac	aaagcttcta	g				561

<210> 31

<211> 2028

<212> DNA

<213> Homo sapiens

<400> 31

atggagagcg	gcaccagcag	ccctcagcct	ccacagttag	atccccctgga	tgcggttccc	60
cagaagggct	tggagcctgg	ggacatcgcg	gtgctagtgc	tgtacttcc	ctttgtcctg	120
gctgttgga	tatggtccac	agtgaagacc	aaaagagaca	cagtgaagg	ctacttctg	180
gctggagggg	acatgggtgtg	gtggccagt	ggtgcaccc	tgtttgccag	caatgttgga	240
agtggacatt	tcattggcct	ggcagggta	ggtgctgcta	cgggcatttc	tgtatcagct	300
tatgaactta	atggcttgtt	ttctgtgctg	atgttggcct	ggatcttcc	acctatctac	360
attgctgggc	aggtcaccac	gatgccagaa	tacctacgga	agcgcttcgg	tggcatcaga	420

atccccatca	tcctggctgt	actctaccta	tttatctaca	tcttcaccaa	gatctcggtg	480
gacatgtatg	caggtgccat	cttcatccag	cagtctttgc	acctggatct	gtacctggcc	540
atagttgggc	tactggccat	caactgctgt	tacacggttg	ctgggtggcct	ggctgctgtg	600
atctacacgg	atgccctgca	gacgctgac	atgcttatag	gagcgctcac	cttgatgggc	660
tacagtttgc	ccgcggttgg	tgggatggaa	ggactgaagg	agaagtactt	cttggccctg	720
gctagcaacc	ggagtgaaga	cagcagctgc	gggctgcccc	gggaagatgc	cttccatatt	780
ttccgagatc	cgctgacatc	tgatctcccc	tggccggggg	tcctattttg	aatgtccatc	840
ccatccctct	ggtactggtg	cacggatcag	gtgattgtcc	agcggactct	ggctgccaag	900
aacctgtccc	atgccaagg	aggtgctctg	atggctgcat	acctgaaggt	gctgccctc	960
ttcataatgg	tgttccctgg	gatggtcagc	cgcactctct	tcccagatca	agtggcctgt	1020
gcagatccag	agatctgcca	gaagatctgc	agcaaccctt	caggctgttc	ggacatcgcg	1080
tatcccaaac	tcgtgctgga	actcctgccc	acagggctcc	gtgggctgat	gatggctgtg	1140
atggtggcgg	ctctcatgtc	ctccctcacc	tccatcttta	acagtgccag	caccatcttc	1200
accatggacc	tctggaatca	cctccggcct	cgggcatctg	agaaggagct	catgattgtg	1260
ggcaggggtg	ttgtgctgct	gctggctcctg	gtctccatcc	tctggatccc	tgtggctccag	1320
gccagccagg	gcggccagct	cttcatctat	atccagtcca	tcagctccta	cctgcagccg	1380
cctgtggcgg	tggctctcat	catgggatgt	ttctggaaga	ggaccaatga	aaaggggtgc	1440
ttctggggcc	tgatctcggg	cctgctcctg	ggcttggtta	ggctggctct	ggactttatt	1500
tacgtgcagc	ctcgatgcga	ccagccagat	gagcgccggg	tcctggtgaa	gagcattcac	1560
tacctctact	tctccatgat	cctgtccacg	gtcaccctca	tcactgtctc	caccgtgagc	1620
tggttcacag	agccaccctc	caaggagatg	gtcagccacc	tgacctggtt	tactcgtcac	1680
gaccccgctg	tccagaagga	acaagcacca	ccagcagctc	ccttgtctct	tacctctctc	1740
cagaacggga	tgccagaggc	cagcagcagc	agcagcgctc	agttcgagat	ggttcaagaa	1800
aaacacgtcta	aaaccacag	ctgtgacatg	accccaaagc	agtccaaagt	ggtgaaggcc	1860
atcctgtggc	tctgtggaat	acaggagaag	ggcaagggaag	agctcccggc	cagagcagaa	1920
gccaatcatag	tttccctgga	agaaaacccc	ttgggtgaaga	ccctcctgga	cgtcaacctc	1980
atcttctgcg	tgagctgcgc	catctttatc	tggggctatt	ttgcttag		2028

<210> 32

<211> 1458

<212> DNA

<213> Homo sapiens

<400> 32

atggagccct	gttggggaga	aggcttgttt	catctagcac	ccccacgcca	ccatccccag	60
aaggctgact	ggcattttctg	tccacagcac	atccaggaat	tcaccaatga	gacatggcag	120
gcgcgtactg	gagagccact	gcccgatcac	ctagtcctgc	ttatgtgggtc	cctcatcgctg	180
tctctgtatc	ccctgggagg	cctcttttga	gcaactgctt	caggtccctt	ggccatcacg	240
ctgggaagga	agaagtcctt	cctgggtgaat	aacatctttg	tgggtgcagc	agcaatcctg	300
tttgattcca	gccgcaaagc	aggctccttt	gagatgatca	tgctgggaag	actgctcgctg	360
ggagtcaatg	caggtgtgag	catgaacatc	cagcccatgt	acctggggga	gagcgccccct	420
aaggagctcc	gaggagctgt	ggccatgagc	tcagccatct	ttacggctct	ggggatcgctg	480
atgggacagg	tggtcggact	cagggagctc	ctaggtggcc	ctcaggcctg	gcccctgctg	540
ctggccagct	gcctgggtgc	cggggcgctc	cagctcgctc	ccctgcctct	gctccctgaa	600
agcccgcgct	acctcctcat	tgactgtgga	gacaccgagg	cctgcctggc	agcactacgg	660
cggctccggg	gctccgggga	cttggcaggg	gagctggagg	agctggagga	ggagcgcgct	720
gcctgccagg	gctgccgtgc	ccggcgccca	tgggagctgt	tccagcatcg	ggcctgagg	780
agacaggtga	caagcctcgt	ggttctgggc	agtgccatgg	agctctgcgg	gaatgactcg	840
gtgtacgect	acgcctcttc	cgtgttccgg	aaggcaggag	tgccggaagc	gaagatccag	900
tacgcgatca	tcgggactgg	gagctgcgag	ctgctcacgg	cggttgttag	ttgtgtggta	960
atcgagaggg	tgggtcggcg	cgtgctgtct	atcgggtgggt	acagcctgat	gacctgctgg	1020
gggagcatct	tactgtggc	cctgtgcctg	cagagctcct	tcccctggac	actctacctg	1080
gccatggcct	gcattcttgc	cttcatcctc	agctttggca	ttggccctgc	cggagtgcag	1140
gggatccctg	ccacagagct	gtttgaccag	atggccaggc	ctgctgcctg	catggctctgc	1200
ggggcgctca	tgtggatcat	gctcatcctg	gtcggcctgg	gatttccctt	tatcatggag	1260
gccttgtccc	acttccctta	tgcccttttc	cttgggtgct	gtgtctgtgg	ggccatctac	1320
actggcctgt	tccttccctga	gaccaaaggc	aagaccttcc	aagagatctc	caaggaatta	1380
cacagactca	acttccccag	gcgggcccag	ggccccacgt	ggaggagcct	ggaggttatc	1440
cagtcaacag	aactctag					1458

<210> 33
 <211> 1491
 <212> DNA
 <213> Homo sapiens

<400> 33
 atgagagcgc tccgaagact gattcagggc aggatcctgc tcttgaccat ctgcgctgcc 60
 ggcatttggtg ggacttttca gtttggctat aacctctcta tcatcaatgc cccgaccttg 120
 cacattcagg aattcaccaa tgagacatgg caggcgcgta ctggagagcc actgcccgat 180
 cacctagtcc tgcttatgtg gtccctcatc gtgtctctgt atcccttggg aggcctcttt 240
 ggagcactgc ttgcaggtcc cttggccatc acgctgggaa ggaagaagtc cctcctgggtg 300
 aataacatct ttgtggtgtc agcagcaatc ctgtttggat tcagccgcaa agcaggctcc 360
 tttgagatga tcatgctggg aagactgtc gtgggagtca atgcaggtgt gagcatgaac 420
 atccagccca tgtacctggg ggagagcgcc cctaaggagc tccgaggagc tgtggccatg 480
 agctcagcca tctttacggc tctggggatc gtgatgggac aggtgggtcgg actcaggag 540
 ctccataggtg gccctcaggc ctggcccctg ctgctggcca gctgcctggt gcccgggcg 600
 ctccagctcg cctccctgcc tctgtccct gaaagcccgc gctacctcct cattgactgt 660
 ggagacaccg aggcctgcct ggcagcacta cggcggtcc ggggctccgg ggacttgga 720
 ggggagctgg aggagctgga ggaggagcgc gctgcctgcc agggctgccg tgcccgccg 780
 ccatgggagc tgttccagca tcgggccctg aggagacagg tgacaagcct cgtggttctg 840
 ggcagtgcc tggagctctg cgggaatgac tcggtgtacg cctacgcctc ctccgtgttc 900
 cggaaggcag gagtgccgga agcgaagatc cagtacgcga tcatcgggac tgggagctgc 960
 gactgtctca cggcggttgt tagttgtgtg gtaatcgaga ggggtgggtcg gcgctgtctg 1020
 ctcatcggtg ggtacagcct gatgacctgc tgggggagca tcttactgt ggcctgtgc 1080
 ctgcagagct ccttcccctg gacactctac ctggccatgg cctgcatctt tgccttcac 1140
 ctacgctttg gcattggccc tgccggagtg acggggatcc tggccacaga gctgtttgac 1200
 cagatggcca ggcctgctgc ctgcatggtc tgcggggcgc tcatgtggat catgtctac 1260
 ctggctggcc tgggatttcc ctttatcatg gaggccttgt cccacttcc ctatgtccct 1320
 ttccttgggt tctgtgtctg tggggccatc tacactggcc tgttccttcc tgagacaaa 1380
 ggcaagacct tccaagagat ctccaaggaa ttacacagac tcaacttccc caggcgggc 1440
 cagggcccca cgtggaggag cctggagggt atccagtcaa cagaactcta g 1491

<210> 34
 <211> 1501
 <212> DNA
 <213> Homo sapiens

<400> 34
 batgtccac gccctcctgc gatctagaat gattcagggc aggatcctgc tcttgaccat 60
 ctgcgctgcc ggcatttggtg ggacttttca gtttggctat aacctctcta tcatcaatgc 120
 cccgaccttg cacattcagg aattcaccaa tgagacatgg caggcgcgta ctggagagcc 180
 actgcccgat cacctagtcc tgcttatgtg gtccctcatc gtgtctctgt atcccttggg 240
 aggcctcttt ggagcactgc ttgcaggtcc cttggccatc acgctgggaa ggaagaagtc 300
 cctcctgggtg aataacatct ttgtggtgtc agcagcaatc ctgtttggat tcagccgcaa 360
 agcaggctcc tttgagatga tcatgctggg aagactgtc gtgggagtca atgcaggtgt 420
 gagcatgaac atccagccca tgtacctggg ggagagcgcc cctaaggagc tccgaggagc 480
 tgtggccatg agctcagcca tctttacggc tctggggatc gtgatgggac aggtgggtcgg 540
 actcaggag ctccataggtg gccctcaggc ctggcccctg ctgctggcca gctgcctggt 600
 gcccgggcg ctccagctcg cctccctgcc tctgtccct gaaagcccgc gctacctcct 660
 cattgactgt ggagacaccg aggcctgcct ggcagcacta cggcggtcc ggggctccgg 720
 ggacttgga ggggagctgg aggagctgga ggaggagcgc gctgcctgcc agggctgccg 780
 tgcccgccg ccatgggagc tgttccagca tcgggccctg aggagacagg tgacaagcct 840
 cgtggttctg ggcagtgcc tggagctctg cgggaatgac tcggtgtacg cctacgcctc 900
 ctccgtgttc cggaaggcag gagtgccgga agcgaagatc cagtacgcga tcatcgggac 960
 tgggagctgc gactgtctca cggcggttgt tagttgtgtg gtaatcgaga ggggtgggtcg 1020
 gcgctgtctg ctcatcggtg ggtacagcct gatgacctgc tgggggagca tcttactgt 1080
 ggcctgtgc ctgcagagct ccttcccctg gacactctac ctggccatgg cctgcatctt 1140
 tgccttcac ctacgctttg gcattggccc tgccggagtg acggggatcc tggccacaga 1200
 gctgtttgac cagatggcca ggcctgctgc ctgcatggtc tgcggggcgc tcatgtggat 1260

catgctcatc	ctgggtcgcc	tgggatttcc	ctttatcatg	gaggccttgt	cccacttcc	1320
ctatgtccct	ttccttgggtg	tctgtgtctg	tggggccatc	tacactggcc	tggtccctcc	1380
tgagacaaa	ggcaagacct	tccaagagat	ctccaaggaa	ttacacagac	tcaacttccc	1440
caggcggggc	cagggcccca	cgtggaggag	cctggagggt	atccagtcaa	cagaactcta	1500
g						1501

<210> 35

<211> 4077

<212> DNA

<213> Homo sapiens

<400> 35

atggtagtgg	tgaagcccat	gaacacaatg	gctccggtgg	tcacccggaa	taccggtctt	60
attctctatg	agggtcagtc	tccggccctc	acaggccctg	caggcagtgg	tccgcaaaac	120
ttggtcatca	gcgatgagga	tgacctagaa	gcagtgcggc	tagaggtggg	ggctgggctc	180
cggcatgggtc	accttgtcat	tctgggtgct	tccagtggca	gctctgctcc	caagagcttt	240
acagtggctg	agctggcagc	cggccagggtg	gtctaccagc	atgatgacag	agacggtctg	300
ctgagcgaca	acctgtgtgt	tccgatgggtg	gatggaggag	gcaggcacca	ggtacagttt	360
ctgttcccca	tcaccttagt	gctgtgggat	gaccagccac	ctgttctcaa	tgccaacacg	420
gggctgacac	tgccagaggg	tgaaacagtg	cccacctctg	ccctttccct	gagtgcact	480
gacatggatt	cagatgattc	tctgtgtgct	tttgtgtgtg	agtcaccctt	cttaactacg	540
gggcatctgc	ttctccgcca	aactcaccct	ccccatgaga	agcaggaact	tctcagaggc	600
ctttggagga	aggagggggc	attttatgag	cgaacagtga	cagagtggca	gcagcaggac	660
ataacagagg	gcaggctgtt	ctatagacac	tctgggcccc	atagtcttgg	gccagtca	720
gaccagttca	catttagagt	ccaggataac	catgaccctc	ctaatacagtc	cgggctacag	780
cggtttgtga	ttcgtatcca	tctgtgggat	cgcctccctc	cggagctggg	cagtggctgt	840
ccccctcgta	tggtggtaca	ggaatcccag	ctcacaccac	tgaggaagaa	gtggctgcgc	900
tacactgacc	tgacacacaga	tgaccgagaa	ctacgttaca	cagtgactca	gtccccaca	960
gacacagacg	aaaatcacct	gccagcccca	ctgggtacct	tggtcttgac	tgacaacccc	1020
tcagtctgtg	tgacctat	tacccaagcc	cagatcaacc	atcataaaat	tgcttacaga	1080
cccccggtc	aagaactggg	cgtggctact	cgagtggccc	agttccagtt	cagggtggaa	1140
gaccagctg	ggaatgtggc	tccaggctacc	tttacccttt	acttgcatcc	cgtggacaac	1200
cagccacctg	agatcctcaa	caccggcttc	actattcagg	agaagggtca	ccacatcctg	1260
agtgagacag	agttgcaagt	gaatgatgta	gacactgatg	ttgccatat	ctctttcact	1320
ctcactcagg	cacccaacaa	tgccacatg	agagtgtctg	gacagatcct	gcagttaggg	1380
ggtctcttcc	acttgaggga	cataaaacag	ggccgagttt	cctatgcccc	taatggggac	1440
aagtccctga	ctgatagctg	ctccttggaa	gtcagtga	gacatcatgt	ggtgcccatc	1500
actctcagag	taaatgtccg	gccagtggat	gatgaagtgc	ccatactgag	ccatcctact	1560
ggcactctgg	agtcctatct	agatgtctta	gaaaatgggg	ctactgaaat	caactccaat	1620
gttattaagg	ggaccaatga	ggaaaactgat	gacttgatgt	tgactttcct	cttgggaagat	1680
ccacctttgt	atgggggaaat	cttgggtcaat	ggcattccag	cagagcagtt	tactcaaagg	1740
gacatcttgg	agggctctgt	tgtatatacc	cacaccagtg	gtgagatagg	cctattgcct	1800
aaagcggatt	cttttaacct	gagtctgtca	gatatgtctc	aagaatggag	aattggtggc	1860
aatactatcc	aaggagttac	tatatgggtg	accatcctgc	ctgttgatag	ccaggcccca	1920
gaaatctttg	taggtgaaca	gttgatagta	atggaagggtg	ataaaaagtg	tataacatca	1980
gtgcataata	gtgctgaaga	tgtcgactcc	ctgaatgatg	acatcttgtg	cactatagtt	2040
attcagccta	cttcagggtta	tgttgaaaac	atttctccag	caccaggctc	tgagaaatca	2100
agagcagggg	ttgccataag	tgctttcaac	ttgaaagatc	tcaggcaggg	ccacataaac	2160
tatgtccaga	gtgtccataa	aggggtggaa	cctgtggagg	accgatattgt	atttcgttgt	2220
tctgatggca	ttacttttcc	agagagacag	ttcttcccca	ttgtaatcat	tcccaccaat	2280
gatgaacagc	cagagatgtt	tatgagagaa	tttatgggtg	tggaaggcat	gagtctggta	2340
attgatacac	ccattctcaa	tgctgctgat	gctgatgttc	ccctggatga	tttaactttc	2400
actattaccc	aattccccac	tcatgggtcac	atcatgaatc	agctgataaa	tggcacgggt	2460
ttggtcgaaa	gcttcacctt	ggatcagatc	atagagagtt	ccagcattat	ttatgagcat	2520
gatgactccg	agaccaggga	agacagtttt	gtgattaaac	taacagatgg	gaagcactct	2580
gtggaaaaga	cggctctcat	tatagttatc	cctgttgatg	atgagacgcc	cagaatgact	2640
atcaataatg	gactagaaat	agaaattggg	gataccaaga	ttatcaacaa	caaaatatta	2700
atggcaacag	atthagattc	agaagacaaa	tctttgggtt	atattattcg	ttatgggcca	2760
ggacatggct	tattacagag	acgaaaacct	actggtgcct	ttgaaaatat	cacactgggc	2820

atgaatttta	cccaggatga	agtagacaga	aacttaattc	agtatgtcca	tttggggcaa	2880
gagggcattc	gggacctaat	taaatttgat	gtgactgatg	gaataaatcc	cctcatagat	2940
cgttactttt	atgtgtccat	cgggagcatt	gacattgtct	tccttgatgt	gataagtaag	3000
ggagtgtcct	tgaaagaagg	tggcaaagtc	actcttaca	cagacctact	aagcactagt	3060
gacttgaaca	gtcctgatga	aaacttggtt	tttaccatca	ccagggtcc	catgcgaggt	3120
cacctggaat	gcacggatca	gcctgggtgtg	tccatcacgt	ctttcactca	gctgcaactg	3180
gctggaaaca	aaatctacta	catccacaca	gctgatgatg	aagtgaataat	ggacagtttt	3240
gagtttcaag	tcaccgatgg	acgtaaccct	gtctttcgga	cattccgtat	ctccattagc	3300
gatgtggaca	ataaaaagcc	agtggtcacc	atccacaagc	tggttgtcag	tgaaagtga	3360
aacaagctga	ttactccttt	tgagctcact	gtcgaagaca	gagatactcc	tgacaagctc	3420
ctgaaattca	ctatcaccca	ggtgcctatt	catggccatc	tcctattcaa	caataaccaga	3480
cctgtcatgg	tttttaccac	gcaagacttg	ttcacagtga	ctgatggcac	ccatacagac	3540
ggcactgagt	caagtgaaga	tagctttctc	ttcacagtga	ctgatggcac	ccatacagac	3600
ttctatgttt	ttcctgatac	ggtgtttgaa	acaaggagac	cccaagtgat	gaagatccag	3660
gtcttggtctg	ttgacaacag	tgtcccccaa	atgcgagtga	ataagggggc	ctctacactt	3720
cgactctag	ccactggcca	cttgggggtt	atgatcacaa	gcaaaatatt	gaaagtggag	3780
gacagagaca	gcttacacat	ttctcttaga	tttatcgtga	cagaggcccc	tcaacatgga	3840
tatcttctca	acctggacaa	aggcaaccac	agcactcact	agttcacaca	agctgacatt	3900
gatgacatga	aaatatgcta	tgtcttaaga	gaaggggcta	atgccacaag	tgatatgttc	3960
tattttgcag	ttgaagatgg	tggtaagtat	tccccctctc	tggtagtgac	cgcaaggaga	4020
gacgcttttc	ttggttgctc	tctgatgaca	ttattacaag	aagtcttcat	caagtaa	4077

<210> 36
 <211> 9318
 <212> DNA
 <213> Homo sapiens

<400> 36						
atggcacgat	cttggctcac	tgcaacctcc	acctcccggc	ccgctgcctt	cggcagggcg	60
ttgctgtccc	ctggctctgc	gggggctgca	gggggtccctg	ctgaggaggc	catagtgtctg	120
gcgaaccgcg	gactccgggt	gcctttcggc	cgtgaagtct	ggctggatcc	cctgcatgac	180
ctgggtgttg	aggtgcagcc	cggggaccgc	tgcgcgggtt	cggtactaga	caacgacgca	240
ctggcccagc	gaccggggcg	cctgagctcc	aagcgcttcc	cgtgcgactt	tgccctggc	300
gaggtgcgct	actctcacct	gggcgcgcgc	agcccgtctc	gggaccgcgt	ccgctgcag	360
ctgcgctatg	acgcgcccgc	aggggagcta	gtgctaccac	tggtactgga	ggtggaggtg	420
gtcttcaccc	agctggaggt	tgtgactcgg	aacttgccctc	tggctcgtga	agaactgctg	480
gggaccagca	atgccctgga	cgcgcggagc	ctggagttcg	ccttccagcc	cgagacagag	540
gagtgcgcgc	tgggcatcct	gtccggcttg	ggcgcgctgc	ctcgctatgg	agaactcctc	600
cactaccgcc	aggtccctgg	aggagccaga	gagggaggcg	ccccggagac	tctcctgatg	660
gactgcaaag	ctttccagga	actaggcgctg	cgtatcgcc	acacagccgc	cagtcgctca	720
caaacaggg	actggatacc	catggtggtg	gagctgcgtt	cacgaggggc	tcctgtgggc	780
agccctgctt	tgaaacgcga	gcaattccag	gttctggtga	ggatccgagg	aggggcccag	840
aacactgcac	ccaagcccag	tttcgtggcc	atgatgatga	tggaggtgga	ccagtttgta	900
ctgacggccc	tgaccccaga	catgctggca	gccgaggatg	ctgagtctcc	ctctgacctg	960
ttgatcttca	accttacttc	tccattccag	cctggccagg	gctacttggg	gagcaccgat	1020
gatcgcagcc	tgcccctttc	ctccttcaat	cagagggatc	tgccgctcct	gaagattgcc	1080
taccagcccc	cttctgaaga	ctctgaccag	gagcgcctct	ttgaactgga	attggaggta	1140
gtggatctag	aaggagcagc	ttcagaccct	tttgcccttca	tggtagtggt	gaagcccatg	1200
aacacaatgg	ctccggtggg	caccgggaat	accggtctta	ttctctatga	gggtcagctt	1260
cggccctca	caggccctgc	aggcagtggt	ccgcaaaact	tggatcatcag	cgatgaggat	1320
gacctagaag	cagtgcggct	agaggtgggtg	gctgggctcc	ggcatgggtca	ccttgtcatt	1380
ctgggtgctt	ccagtggcag	ctctgctccc	aagagcttta	cagtggctga	gctggcagcc	1440
ggccaggtgg	tctaccagca	tgatgacaga	gacggctcgc	tgagcgacaa	cctgggtgctt	1500
cgcatgggtg	atggaggagg	caggcaccag	gtacagtttc	tgttccccat	cacctagtg	1560
cctgtggatg	accagccacc	tgttctcaat	gccaaacacg	ggctgacact	ggcagagggt	1620
gaaacagtgc	ccatcctgcc	cctttccctg	agtgcactg	acatggattc	agatgattct	1680
ctgctgcttt	ttgtgctgga	gtcacccttc	ttaactacgg	ggcatctgct	tctccgcaa	1740
actcacctc	ccatgagaa	gcaggaactt	ctcagaggcc	tttgaggaa	ggagggggca	1800
ttttatgagc	gaacagtgc	agagtggcag	cagcaggaca	taacagagg	caggctgttc	1860

tatagacact	ctgggcccac	tagtcctggg	ccagtcacag	accagttcac	atttagagtc	1920
caggataacc	atgacctcc	taatcagtc	gggtacagc	ggtttgtgat	tcgtatccat	1980
cctgtggatc	gctccctcc	ggagctgggc	agtggctgtc	cccttcgtat	ggtggtacag	2040
gaatcccagc	tcacaccact	gaggaagaag	tggctgcgct	acactgacct	ggacacagat	2100
gaccgagaac	tacgttacac	agtgaactcag	ccccccacag	acacagacga	aatcacctg	2160
ccagccccac	tgggtacctt	ggtccttgact	gacaaccctt	cagtcgtggt	gacctttt	2220
acccaagccc	agatcaacca	tcataaaatt	gcttacagac	ccccgggtca	agaactgggc	2280
gtggctactc	gagtggccca	gttcagttc	caggtggaag	accgagctgg	gaatgtggct	2340
ccaggtacct	ttacccttta	cttgcatccc	gtggacaacc	agccacctga	gaccccaac	2400
accggcttca	ctattcagga	gaagggtcac	cacatcctga	gtgagacaga	gttgacagt	2460
aatgatgtag	acactgatgt	tgcccatatc	tctttcactc	tcactcaggc	acccaaacat	2520
ggccacatga	gagtgtctgg	acagatcctg	catgtagggg	gtctcttcca	cttgaggagc	2580
ataaaacagg	gccgagtttc	ctatgcccat	aatggggaca	agtccttgac	tgatagctgc	2640
tccttggaag	tcagtgcag	acatcatgtg	gtgcccata	ctctcagagt	aatgtccgg	2700
ccagtggatg	atgaagtgcc	catactgagc	catcctactg	gcactctgga	gtcctatcta	2760
gatgtcttag	aaaatggggc	tactgaaatc	actgccaatg	ttattaaggg	gaccaatgag	2820
gaaactgatg	acttgatgtt	gactttcctc	ttggaagatc	cacctttgta	tggggaaatc	2880
ttgggtcaatg	gcattccagc	agagcagttt	actcaaaggg	acatcttgga	gggctctgtt	2940
gtatataccc	acaccagtgg	tgagataggc	ctattgccta	aagcggattc	ttttaacctg	3000
agtctgtcag	ataagtctca	agaatggaga	attgggtggca	atactatcca	aggagtact	3060
atatgggtga	ccatcctgcc	tggtgatagc	caggccccag	aaatctctgt	aggtgaacag	3120
ttgatagtaa	tggaaggtga	taaaagtgtt	ataacatcag	tgcatataag	tgctgaagat	3180
gtcgactccc	tgaatgatga	catcttgtgc	actatagtta	ttcagcctac	ttcaggttat	3240
gttgaaaaca	tttctccagc	accaggctct	gagaaatcaa	gagcagggat	tgccataagt	3300
gctttcaact	tgaaaagtct	caggcagggc	cacataaact	atgtccagag	tgtccataaa	3360
gggggtggaac	ctgtggagga	ccgatttgta	tttcgttgtt	ctgatggcat	taacttttca	3420
gagagacagt	tcttccccat	tgtaatcatt	cccaccaatg	atgaacagcc	agagatgttt	3480
atgagagaat	ttatgggtgat	ggaaggcatg	agtctggtaa	ttgatacacc	cattctcaat	3540
gctgctgatg	ctgatgttcc	cctggatgat	ttacttttca	ctattaccca	attccccact	3600
catgggtcac	tcatgaatca	gctgataaat	ggcacgggtt	tggtcgaaag	cttcaccttg	3660
gatcagatca	tagagagttc	cagcattatt	tatgagcatg	atgactccga	atgcaggaa	3720
gacagttttg	tgattaaact	aacagatggg	aagcactctg	tggaaaagac	ggctcctatt	3780
atagttatcc	ctgttgatga	tgagacgccc	agaatgacta	tcaataatgg	actagaaata	3840
gaaattgggg	ataccaagat	tatcaacaac	aaaatattaa	tggcaacaga	tttagattca	3900
gaagacaaat	ctttggttta	tattattcgt	tatgggccag	gacatggctt	attacagaga	3960
cgaaaacctta	ctgggtgcctt	tgaaaatatc	acactgggca	tgaattttac	ccaggatgaa	4020
gtagacagaa	acttaattca	gtatgtccat	ttggggcaag	agggcattcg	ggacctaat	4080
aaatttgatg	tgactgatgg	aataaatccc	ctcatagatc	gttactttta	tgtgtccatc	4140
gggagcattg	acattgtctt	ccctgattgt	ataagtaagg	gagtgtcctt	gaaagaagg	4200
ggcaaaagtc	ctcttaaac	agacctacta	agcactagtg	acttgaacag	tcctgatgaa	4260
aacttggttt	ttaccatcac	cagggtcccc	atgagagggtc	acctggaatg	cacggatcag	4320
cctgggtgtg	ccatcacgtc	tttcaactcag	ctgcaactgg	ctggaaacaa	aatctactac	4380
atccacacag	ctgatgatga	agtgaaaatg	gacagttttg	agtttcaagt	caccgatgga	4440
cgtaacctctg	tctttcggac	attcctgtatc	tccattagcg	atgtggacaa	taaaaagcca	4500
gtggtcacca	tcacaagct	ggttgtcagt	gaaagtgaag	acaagctgat	tactcctttt	4560
gagctcactg	tcgaagacag	agatactcct	gacaagctcc	tgaaattcac	tatccccag	4620
gtgcctattc	atggccatct	cctattcaac	aataccagac	ctgtcatggg	ttttaccaag	4680
caagacttga	atgaaaactt	aatcagctac	aaacatgatg	gcactgagtc	aagtgaagat	4740
agcttctcct	tcacagtgc	tgatggcacc	catacagact	tctatgtttt	tcctgatagc	4800
gtgtttgaaa	caaggagacc	ccaagtgatg	aagatccagg	tcttggctgt	tgacaacagt	4860
gtcccccaaa	tcgcagtga	taagggggcc	tctacacttc	gcactctagc	cactggccac	4920
ttgggggttca	tgatcacaag	caaaatattg	aaagtggagg	acagagacag	cttacacatt	4980
tctcttagat	ttatcgtgac	agaggccctt	caacatggat	atcttctcaa	cctggacaaa	5040
ggcaaccaga	gcatactca	gttcacacaa	gctgacattg	atgacatgaa	aatatgctat	5100
gtcttaagag	aaggggctaa	tgccacaagt	gatattgtct	atthtgcagt	tgaagatgg	5160
ggtggaaaca	agttaacgta	ccagaatttt	cgtctgaatt	gggcatggat	ctcctttgaa	5220
aaggaatatt	acctggtcaa	tgaggactcc	aaatttctag	atgttgttct	taaacgtaga	5280
ggttacttgg	gagaaacttc	ttttataagt	attggcacia	gagacagAAC	tgcaaaaaa	5340
gacaaagact	tcaagggcaa	agcacagaaa	caagtgcagt	tcaaccagg	ccagaccagg	5400

gccacatggc	gagtgcggat	cctgagtgat	ggggagcatg	agcagtctga	aaccttttcag	5460
gtgggtactct	cagagcccgt	gctggctgcc	ttgggaattcc	ccacagtcgc	cactgttgag	5520
atcggttgatc	caggagatga	gccaactgtg	tttattcccc	agtccaaata	ctccgttgaa	5580
gaagatggtg	gtgagctggt	cattcccatc	aggaggagcg	gagatgtgag	ccaggagttg	5640
atgggtggtct	gttatacca	acaaggaaca	gcaactggaa	ctgtgcccac	ttccgtggtg	5700
tcttactctg	attacatatc	caggcctgag	gaccacacca	gtgttggtccg	ctttgacaaa	5760
gatgaacggg	agaaactgtg	tcggatagtc	ataattgatg	actctttgta	cgaggaggag	5820
gaaaccttcc	atgtccctct	gagcatgccc	atggggggaa	gaatcggatc	agagttccca	5880
ggggctcaag	ttacaatcgt	tcctgacaaa	gatgatggtc	catctgattc	caaatttaat	5940
gttgctgaga	actacagttt	actgccttcc	acctgttttc	aaggtagcat	agccacggca	6000
gaggcagcca	cccaggagg	gggacgcagc	accagacaag	tagctgcagt	caaaaaagac	6060
aaagacttca	agggcaaagc	acagaaacaa	gtgcagttca	accaggcca	gaccagggcc	6120
acatggcgag	tgccggtcct	gagtgatggg	gagcatgagc	agtctgaaac	ctttcaggtg	6180
gtactctcag	agcccgtgct	ggctgccttg	gaattcccca	cagtcgccac	tgttgagatc	6240
gttgatccag	gagatgcatg	cccattgggg	gaagaatcgg	atcagagttc	ccaggggctc	6300
aagttacaat	cgttcctgac	aaagatgatg	gtgagtacta	atttacttga	aaattctttt	6360
tcccgggaag	atcaacatca	ggaacaactt	tctagacaga	aaaaatggga	atctaaaaca	6420
atgataatat	acacatttat	tttatgtgag	acagaaaagc	cctgcattct	tgagctgatg	6480
gacgatgtgc	tctatgagga	ggtagaggag	ctccgcctgg	tactcggcac	tccacaaagc	6540
aactctccct	ttggggctgc	agttggtgaa	caaaatgaaa	ctctcataag	gatccgagat	6600
gatgctgata	agactgttat	taaatttgga	gaaaccaa	ttagtgtcac	tgaacccaaa	6660
gaacctggag	agtcgggtgt	tataagaatt	ccagtgtatc	gccaaggaga	cacttcaaag	6720
gtttccattg	tgagagtcca	caccaaggat	ggctcggcca	cctctggaga	agactaccac	6780
cctgtgtcag	aagaaattga	gtttaaggaa	ggggaacccc	agcacgtggt	tgaatcgaa	6840
gttacctttg	acggggtgag	agagatgaga	gaggccttca	ctgttcacct	aaaacctgat	6900
gaaaatatga	tagcagagat	gcagctttcc	aactttgagc	tcacctcag	ccctgatggc	6960
acaagagttg	gaaaccacaa	gtgctccaac	ctcctggatt	atactgaagt	gaagactcat	7020
tatggtttct	tgactgatgc	taccaaaaat	ccagaaataa	ttggagagac	atatccttac	7080
cagtacagct	tgtccatcag	aggttccact	accttgccgt	tctaccggaa	cctgaacctta	7140
gaggcctgtt	tatgggagtt	cgtttagctac	tatgacatgt	cagaactcct	tgctgactgc	7200
agatcagtg	tgaatgcaag	catatttcat	gagatggcac	ctgaaggaaa	gcaaagtaaa	7260
tgcttggtaa	attctacttt	atactctatt	ttggaatg	atgagagcct	tccaaacttt	7320
tgcatttcag	cattaaggat	gggaaaatgg	agaaaaataa	aaagcaaacc	atcagcacag	7380
actccatgtg	ctcagaggct	tcgtgggttt	attgaccacc	ccaggaaaca	gcccctgcag	7440
caagccagtg	ctgaccacag	catgctcccc	gtgatctcca	ctagagagct	ttccaacttt	7500
gagctcaccc	tcagccctga	tggcacaaga	gttggaaacc	acaagtgtc	caacctcctg	7560
gattatactg	aagtgaagac	tcattatggt	ttcttgactg	atgctaccaa	aaatccagaa	7620
ataattggag	agacatatcc	ttaccagtac	agcttgctca	tcagagggtc	cactaccttg	7680
cgcttctacc	ggaacctgaa	cctagaggcc	tgtttatggg	agttcgttag	ctactatgac	7740
atgtcagaac	tccttgctga	ctgtggtggc	accattggaa	cagatggaca	ggtcctaaac	7800
ctagtgcagt	cctatgtgac	ccttcgagtc	cctctgtatg	tttctacgt	gttccattcc	7860
cccggtgggg	taggaggtcg	gcagcatttt	gacttgaa	cagagcttcg	tctaactttt	7920
gtgtacgaca	ccgccatctt	gtggaatgat	ggaattggca	gccccccaga	ggctgaactt	7980
caaggtttct	tctatccaac	cagcatgcgc	atcggtgatg	aggggcgctt	ggccgtgcac	8040
ttcaagacag	aggctcagtt	ccatggctta	tttgtgctgt	cacatcccgc	atcctttaca	8100
agctcagtg	tcagtgcagc	tgatcatcca	ggcctgacat	tttccctccg	cctcataagg	8160
agtgaaccaa	cctataacca	gccagtacag	cagtggagct	ttgtctctga	ctttgccgta	8220
cgtgactact	cagggaacct	tactgtgaag	ctggtgccat	gcactgcccc	atcacatcag	8280
gaataccgcc	tgccagtcac	ctgcaacccc	agagaacctg	tcacctttga	ccttgacatc	8340
cgattccaac	aggtcagtg	tccagtggtc	gctgagttta	gcttgaacac	ccaaatgtac	8400
ctgctctcta	agaagagtct	ctggttgtct	gatggatcca	tgggattcgg	gcaagagagt	8460
gatgttgctt	ttgcagaagg	tgatataatt	tatggctcgt	tcattggtgga	tcctgtccag	8520
aatctgggtg	actcctttta	ctgcagcatt	gagaagggtg	ttctatgcac	tggagctgat	8580
ggctatgttc	ccaagtatag	tccaatgaat	gcagaatatg	gctgcttagc	cgactctcct	8640
tcactcttat	atagatttaa	aattgtggac	aaagctcagc	cagagacaca	agcgaccagt	8700
tttggaatg	tcctatttaa	tgccaaacta	gcagtggatg	accctgaagc	cattctctta	8760
gtgaatcagc	ctggatctga	tggattttaa	gtcgactcaa	caccactctt	tcaggtcgct	8820
ctaggccgag	aatggtatat	acatacgatc	tatacagtga	gatcgaaaga	caatgccaat	8880
cgaggtattg	gcaaaagaag	tgtggagtac	ctattctcgg	tgagtcaagg	aaagcccaa	8940

tccaccacca	agagccggaa	gaagagagag	atcaggagca	caccctcact	ggcatgggag	9000
attggtgctg	aaaacagtcg	aggaacaaac	atccagcaca	ttgccctgga	ccgcaccaag	9060
aggcagatcc	cccatgggag	agcacctcca	gatggcatcc	tccccctggga	gctcaacagc	9120
cccagctctg	cagtcagcct	ggctactgtg	gtgggaggca	ccacggtagg	gttactcacc	9180
atctgcctca	ctgtcattgc	agtgtgatg	tgcaggggca	aggaaagttt	caggggggag	9240
gatgccccga	aaggctccag	cagcagttag	cccatggtgc	ccccacagag	ccatcacaat	9300
gacagctcag	aagtttga					9318

<210> 37

<211> 1374

<212> DNA

<213> Homo sapiens

<400> 37

atgggggtgta	gtggagcctg	gggcttgagc	tgcccttgctc	cacagacgcc	atcctggggc	60
tggaggaaga	tgcggacgcc	atccatgagg	aaccggagtg	gcgcctgtgtg	gagcagggcc	120
tctgtcccct	tctctgcctg	ggaagtagag	gtgcagatga	gggtgacggg	actggggcgc	180
cggggagccc	agggcatggc	cgtgtgtgtac	acccggggca	ggggccatgt	aggctctgtc	240
cttggggggc	tggcttcgtg	ggacggcatc	gggatcttct	ttgactctcc	ggcagaggat	300
actcaggaca	gtcctgccat	ccgtgtgctg	gccagcgacg	ggcacatccc	ctctgagcag	360
cctgggggatg	gagctagcca	agggctgggc	tctgttcatt	gggacttccg	gaaccggcca	420
caccccttca	gagcacggat	cacctactgg	gggcagaggc	tgcgcagtgtc	cttgaacagt	480
ggcctcactc	ccagtatccc	aggtgagttc	tgtgtggatg	tggggcccct	gcttttggtc	540
cctggagggtt	tctttggggg	ctcagcagcc	accggcacc	tggcagatga	tcattgatgtc	600
ctgtccttcc	tgaccttcag	cctgagttag	cccagcccag	aggttcccc	tcagcccttc	660
ctggagatgc	agcacgtccg	cctggcgagg	cagctggaag	ggctgtgggc	aaggctgggc	720
ttgggcacca	gggaggatgt	aactccaaaa	tcagactctg	aagctcaagg	agaaggggaa	780
aggctctttg	acctggagga	gacgctgggc	agacaccgcc	ggtacctgca	ggctctgcgg	840
ggtctctcca	agcagctggc	ccaggcttag	agacaatgga	agaagcagct	gggccccag	900
gccaagccag	gcctgacgga	ggctggggat	gcagctgtcc	gcatggctgc	agaagcccag	960
gtctcctacc	tgctgtggg	cattgagcat	catttcttag	agctggacca	catctggg	1020
ctctctcagg	aggaccttcg	gggcccggc	aaggcagcag	ccaaggcccc	ccgcccacct	1080
ggccagcccc	caagggcctc	ctcgtgcctg	cagcctggca	tcttctgtgt	ctacctcttc	1140
attcagactg	taggcttctt	cggctacgtg	cacttcaggc	gcccgggtgc	ccggccggcg	1200
aagaccatgg	cgttcatgg	gaagaccatg	gtgggcccgc	agctgaagaa	cctcactggg	1260
agcctgggag	gcggcgagga	taaggagatg	ggggacaagt	cggcagccga	agctcagggc	1320
atgagccggg	aggagtacga	ggagtatcag	aagcaactcg	tggaagagaa	gtga	1374

<210> 38

<211> 1581

<212> DNA

<213> Homo sapiens

<400> 38

atgccggcgg	tcagtggctc	aggctccctta	ttctgccttc	tcctcctgct	cctggacccc	60
cacagccctg	agacgggggtg	tcctcctcta	cgcaggtttg	agtacaagct	cagcttcaaa	120
ggcccaaggc	tggcattgcc	tggggctgga	atacccttct	ggagccatca	tggagacgcc	180
atcctggggc	tggaggaagt	gcggctgacg	ccatccatga	ggaaccggag	tggcgccgtg	240
tggagcaggg	cctctgtccc	cttctctgcc	tgggaagtag	aggtgcagat	gagggtagcg	300
ggactggggc	gccggggagc	ccagggcacg	gccgtgtggt	acacccgggg	caggggcat	360
gtaggctctg	tccttggggg	gctggcttcg	tgggacggca	tcgggatctt	ctttgactct	420
ccggcagagg	atactcagga	cagtcctgcc	atccgtgtgc	tggccagcga	cgggcacatc	480
ccctctgagc	agcctgggga	tggagctagc	caagggtctg	gctcctgtca	ttgggacttc	540
cggaaaccggc	cacacccctt	cagagcacgg	atcacctact	gggggcagag	gctgcgcacg	600
tccttgaaca	tggcctcac	tcccagtgat	ccaggtgagt	tctgtgtgga	tgtggggccc	660
ctgcttttgg	tccttggagg	tttcttttgg	gtctcagcag	ccaccggcac	cctggcagat	720
gatcatgatg	tcctgtcctt	cctgaccttc	agcctgagtg	agcccagccc	agaggttccc	780
cctcagccct	tcctggagat	gcagcacgtc	cgcttggcga	ggcagctgga	agggctgtgg	840
gcaaggctgg	gcttgggcac	cagggaggat	gtaactccaa	aatcagactc	tgaagctcaa	900

ggagaagggg	aaaggctctt	tgacctggag	gagacgctgg	gcagacaccg	ccggatcctg	960
caggctctgc	gggtctctc	caagcagctg	gcccaggctg	agagacaatg	gaagaagcag	1020
ctggggcccc	caggccaagc	caggcctgac	ggaggctggg	ccctggatgc	ttcctgccag	1080
attccatcca	ccccagggag	gggtggccac	ctctccatgt	caactcaataa	ggactctgcc	1140
aaggctcgtg	ccctgctcca	tggacagtgg	actctgctcc	aggccctgca	agagatgagg	1200
gatgcagctg	tccgcatggc	tgcagaagcc	cagggtctct	acctgcctgt	gggcattgag	1260
catcatttct	tagagctgga	ccacatcctg	ggcctcctgc	aggaggagct	tgggggcccg	1320
gcgaaggcag	cagccaaggc	ccccgcacca	cctggccagc	cccdaagggc	ctcctcgtgc	1380
ctgcagcctg	gcattcttct	gttctacctc	ctcattcaga	ctgtaggctt	cttcggctac	1440
gtgcacttca	ggcaggagct	gaacaagagc	cttcaggagt	gtctgtccac	aggcagcctt	1500
cctctgggtc	ctgcaccaca	caccccagg	gccctgggga	ttctgaggag	gcagcctctc	1560
cctgccagca	tgctgcctg	a				1581

<210> 39

<211> 2715

<212> DNA

<213> Homo sapiens

<400> 39

atgctcttgg	ctctatgttc	atctctggct	cttatttttg	cagctcctgt	cagtggacag	60
cttgagcatt	cagggaacta	ctactgcaca	gctgacaatg	gctttggccc	ccagcacagt	120
gaggtggtga	gtctctctgt	cactgtccct	gtgtctcacc	ctgtcctcac	cctcagctct	180
gctgagggcc	tgacttttga	aggagccact	gtgacacttc	actcttcgct	gatcctgcaa	240
gtccactttt	ctgtgtttga	aggagacttc	gtggttctga	ggtgccgggc	aaaggcggaa	300
gtaacactga	atactatgta	caagaatggt	aacgtcctga	cattccttaa	taaaagctct	360
gacttccata	ttcatcacgc	aagtctcaaa	gacaatgggt	catatcaact	tactggattt	420
aacggaagta	atttctctgt	ttcttccaac	atagtcaaaa	tccaagtcca	agagcatctc	480
ctgccccagt	ggttccctgaa	ggcacctgat	cccactgtgg	cccttagtga	gatatttctca	540
gtcaatagag	gtccacttct	gacaggcaca	ggctcccag	ttatgactcc	ctggatttac	600
ttccctactg	aggactggaa	cttccactct	attcccat	ctgtggacga	tgcttgcaaa	660
aggccttggt	ctcctcgggc	tccttgggaa	gttggaagtc	taacaccagg	aaagagtttc	720
cagcagaagg	ggaacccaga	cctgtctatg	ggcccttttg	atgttcttca	cttgtccctc	780
atcacacttt	tttgcaacat	ggcaggttct	ttgttttatt	atatggaact	tggagaaaag	840
aaagatgcat	tatttgttac	aggaaatgaa	agcagaagct	atcattgggt	ccagaagtcc	900
agccttgctg	gtgggcaaga	agcagatcaa	aagttgtggt	ttccccctgg	actgatgagt	960
caggatattt	tcatatatat	cagacaaggt	gagagttgtc	ttgtgattga	gatgtttcat	1020
caggctctaca	gacggcctgc	tggaggtggt	ccagtagagc	atatgagtgt	atgggctctc	1080
agggtgaata	gttcgggact	cttcgcctac	gctgatggct	ggctctttac	tctctttcag	1140
ctccagtctg	tggacaatct	gagcccatca	actcagctct	aaacacacga	aggccatgaa	1200
aagttatgtc	ccttctcggc	catagggcca	cctgcacata	gcaggggcag	cttctcaga	1260
gcaaagaaga	gtctagtgtc	atacatcaaa	ggaaatcaac	tctccttccc	tccagtagaa	1320
gacctattgc	ctaagtccca	atggccctgc	atccagggtc	ttcccaggaa	tatagctgca	1380
gctgcacaca	aacctgtgat	ttccgtccat	cctccatgga	ccacattctt	caaaggagag	1440
agagtgactc	tgacttgcaa	tggatttcag	ttctatgcaa	cagagaaaac	aacatggtat	1500
catcggcact	actggggaga	aaagttgacc	ctgaccccag	gaaacaccct	cgagggttcgg	1560
gaatctggac	tgtagagatg	ccaggcccgg	ggctcccac	gaagtaacct	tgtgcgcttg	1620
ctcttttctt	cagggtgagaa	agaagactgt	gtctctgaca	agaatcctgc	tacaaatcac	1680
actccaatgt	ccaggaagag	atcctcatgt	agttctctaa	gtgccacttc	tttcatagct	1740
cctgctctga	gactcgactc	cttaatcctg	caggcaccat	attctgtggt	tgaagggtgac	1800
acattgggtc	tgagatgcca	cagaagaagg	aaagagaaat	tgactgctgt	gaaatatact	1860
tggaatggaa	acattctttc	catttctaat	aaaagctggg	atcttcttat	cccacaagca	1920
agttcaaaata	acaatggcaa	ttatcgatgc	attggatatg	gagacgagaa	tgatgtattt	1980
agatcaaaatt	tcaaaataat	taaaattcaa	gggatccctg	tgtctggggt	gctcctggag	2040
accagccct	cagggggcca	ggctgttgaa	ggggagatgc	tggctcctgt	ctgctccgtg	2100
gctgaaggca	caggggatac	cacattctcc	tggcaccgag	aggacatgca	ggagagtctg	2160
gggaggaaaa	ctcagcgttc	cctgagagca	gagctggagc	tccttgccat	cagacagagc	2220
catgcagggg	gatactactg	tacagcagac	aacagctacg	gccctgtcca	gagcatgggtg	2280
ctgaatgtca	ctgtgagaga	gaccccaggc	aacagagatg	gccttgtcgc	cgcgggagcc	2340
actggagggc	tgctcagtgc	tcttctcctg	gctgtggccc	tgctgtttca	ctgctggcgt	2400

cggaggaagt	cagtacaccc	caaaaaggga	gatttggtat	actctgagat	ccagactact	2460
cagctgggag	aagaagagga	aggaaatcat	ggcaataaaa	atcaagaact	agaacttggt	2520
aatgtaggag	agagtttttc	tcacagggca	tgcatatgga	gtactctaata	gggaacttgc	2580
caaacaatcg	ggggtgctaa	tacctccagg	acacttctag	aggataagga	tgtctcagtt	2640
gtctactctg	aggtaaagac	acaacaccca	gataactcag	ctggaaagat	cagctctaag	2700
gatgaagaaa	gttaa					2715

<210> 40

<211> 1548

<212> DNA

<213> Homo sapiens

<400> 40

atgctgctgt	gggcgtcctt	gctggccttt	gctccagtct	gtggacaatc	tgcagctgca	60
cacaaacctg	tgatttccgt	ccatcctcca	tggaccacat	tcttcaaagg	agagagagtg	120
actctgactt	gcaatggatt	tcagttctat	gcaacagaga	aaacaacatg	gtatcatcgg	180
cactactggg	gagaaaagtt	gacctgacc	ccaggaaaca	ccctcgaggt	tcgggaatct	240
ggactgtaca	gatgccaggc	ccggggctcc	ccacgaagta	accctgtgcg	cttgctcttt	300
tcttcagact	ccttaatcct	gcaggcacca	tattctgtgt	ttgaagggtga	cacattgggt	360
ctgagatgcc	acagaagaag	gaaagagaaa	ttgactgctg	tgaaatatac	ttggaatgga	420
aacattcttt	ccatttctaa	taaaagctgg	gatcttctta	tcccacaagc	aagttcaaat	480
aacaatggca	attatcgatg	cattggatat	ggagatgaga	atgatgtatt	tagatcaaat	540
ttcaaaataa	ttaaaattca	agaactattt	ccacatccag	agctgaaagc	tacagactct	600
cagcctacag	aggggaattc	tgtaaacctg	agctgtgaaa	cacagcttcc	tccagagcgg	660
tcagacaccc	cacttcactt	caacttcttc	agagatggcg	aggctatcct	gtcagactgg	720
agcacgtacc	cggaaactcca	gctcccaacc	gtctggagag	aaaactcagg	atcctatttg	780
tgtggtgctg	aaacagtggg	gggtaacatc	cacaagcaca	gtccctcgct	acagatccat	840
gtgcagcggg	tccctgtgtc	tggggtgctc	ctggagaccc	agccctcagg	gggccaggct	900
gttgaagggg	agatgctggg	ccttgtctgc	tccgtggctg	aaggcacagg	ggataccaca	960
ttctcctggc	accgagagga	catgcaggag	agtctgggga	ggaaaactca	gcgttccctg	1020
agagcagagc	tggagctccc	tgccatcaga	cagagccatg	cagggggata	ctactgtaca	1080
gcagacaaca	gctacggccc	tgtccagagc	atggtgctga	atgtcactgt	gagagagacc	1140
ccaggcaaca	gagatggcct	tgtcgccgcg	ggagccactg	gagggctgct	cagtgtctct	1200
ctcctggctg	tggccctgct	gtttcactgc	tggcgtcgga	ggaagtcagg	agttgggttt	1260
ttgggagacg	aaaccaggct	ccctcccgcct	ccaggcccag	gagagtccct	ccattccatc	1320
tgccctgccc	aggtggagct	tcagtcgttg	tatgttgatg	tacaccccaa	aaagggagat	1380
ttggtatact	ctgagatcca	gactactcag	ctggggagaag	aagaggaagc	taatacctcc	1440
aggacacttc	tagaggataa	ggatgtctca	gttgtctact	ctgaggtaaa	gacacaacac	1500
ccagataact	cagctggaaa	gatcagctct	aaggatgaag	aaagttaa		1548

<210> 41

<211> 2494

<212> DNA

<213> Homo sapiens

<400> 41

batggctgtg	ggaggaggac	acaaaggagt	tagatgtcct	ccctctgctc	gcagctccca	60
ggtgccacg	tgctgcgctg	gctggaggca	gcaaggggac	gagtgtggga	ttgcggtgtg	120
cgaaggcaac	tccacgtgct	cagagaacga	ggtgtgctg	aggcctggcg	agtgccgctg	180
ccgccacggc	tacttcggtg	ccaactgcga	caccaagtgc	ccgcgccagt	tctggggccc	240
cgactgcaag	gagctgtgta	gctgccaccc	acacgggagc	tgcgaggacg	tgacaggcca	300
gtgtacttgt	cacgcgcggc	gctggggcgc	gcgctgcgag	catgcgtgcc	agtgccagca	360
cggcacgtgc	caccccgga	gcggcgcgctg	ccgctgtgag	tccggtggt	ggggcgcgca	420
gtgcgccagc	gcgtgctact	gcagcgccac	gtcgcgctgc	gaccacaga	ccggcgctg	480
cctgtgccag	caggtctggg	ggggcctgcag	ctgcaacaac	cagtgcgcct	gcaactcgtc	540
tccctgcgag	cagcagagcg	gcgcgtgtca	gtgcgcgag	cgtacgttcg	gcgcgcgctg	600
cgatcgctac	tgccagtgtc	tccgcggccg	ctgccaccct	gtggacggca	cgtgtgctg	660
cgagccgggc	taccgcggca	agtactgtcg	cgagccgtgc	cccgcgggct	tctacggctt	720
gggctgtcgc	cgccggtgtg	gccagtgcaa	gggccagcag	ccgtgcacgg	tggccgaggg	780

ccgtgcttg	acgtgcgagc	ccggctggaa	cggaaccaag	tgcgaccagc	cttgcgccac	840
cggtttctat	ggcgagggct	gcagccaccg	ctgtccgcca	tgccgcgacg	ggcatgcctg	900
taaccatgtc	accggcaagt	gtacgcgctg	caacgcgggc	tggtatcggcg	accggtgcga	960
gaccaagtgt	agcaatggca	cttacggcga	ggactgcgcc	ttcgtgtgcg	ccgactgcgg	1020
cagcggacac	tgcgacttcc	agtcggggcg	ctgcctgtgc	agccctggcg	tccacggggc	1080
ccactgtaac	gtgacgtgcc	cgcccggaact	ccacggcgcg	gactgtgctc	aggcctgcag	1140
ctgccacgag	gacacgtgcg	acccggtcac	tggtgcctgc	cacctagaaa	ccaaccagcg	1200
caagggcgctg	atgggcgcgg	gcgcgctgct	cgctcctgctc	gtctgcctgc	tgctctcgct	1260
gctcggctgc	tgctgcgctt	gccgcggcaa	ggaccctacg	cgccgacccc	gccccgcgag	1320
ggagctttcg	cttgggagga	agaaggcgcc	gcaccgacta	tgccggcgct	tcagtcgcat	1380
cagcatgaag	ctgccccgga	tcccgctccg	gaggcagaaa	ctacccaaag	tcgtagtggc	1440
ccaccacgac	ctggataaca	cactcaactg	cagcttctctg	gagccaccct	cagggctgga	1500
gcagccctca	ccatcctggt	cctctcgggc	ctccttctcc	tcgtttgaca	ccactgatga	1560
aggccctgtg	tactgtgtac	cccatgagga	ggcaccagcg	gagagccggg	accccgaaagt	1620
ccccactgtc	cctgccgagg	cgccggcgcc	gtcccctgtg	cccttgacca	cgccagcctc	1680
cgccgaggag	gcgatacccc	tccccgcgtc	ctccgacagc	gagcggtcgg	cgtccagcgt	1740
ggagggggccc	ggaggggctc	tgtagcgcg	cgtggcccga	cgcgaggccc	ggcggggccc	1800
ggccccggggc	gagattgggg	gcctgtcgct	gtcgccatcg	cccagcgca	ggaaaccgcc	1860
gccacctgac	cccgccacca	agcctaaggt	gtcctggatc	cacggcaagc	acagcgccgc	1920
tgtagctggc	cgtgcgccct	caccaccgcc	gccaggctcc	gaggccgcgc	ccagccccag	1980
caagaggaaa	cggacgcccc	gcgacaaatc	ggcgcatagc	gtcgaaacacg	gcagcccccg	2040
gacccgcgac	ccaacgcgcg	gccccccggg	gctgcccag	gaggcgacag	ccctcgtctc	2100
gccctgcgg	cccagggccc	gagcgcgcgc	cgcgccccgg	cctcttgag	cccacggacg	2160
cgcgcggtcc	cccggaagc	gcgcgaggc	tgctccatg	ttggccgctg	acgtgcgcgg	2220
caagactcgc	agcctggggc	gcgcgagggt	ggcctggggc	gcgcaggggc	ccagggaana	2280
gcggcgcccc	ccacagaaag	ccaagcgctc	cgtgcgcgca	gcctcgcccc	cccgcgcgcc	2340
cccagcgacc	gaaacccccg	ggcctgagaa	ggcgcgagcc	gacttgcccc	cgctgagac	2400
cccccggaag	aagacccccca	tccagaagcc	gccgcgcaag	aagagccggg	aggcgggggg	2460
cgagctgggc	agggcgggcg	caccacacct	gtag			2494

<210> 42

<211> 2614

<212> DNA

<213> Homo sapiens

<400> 42

batggagggc	gcagggcccc	ggggggcgcg	gcgggcgcgcg	cgccggggag	ccggggggccc	60
gccgtaccgc	ctgctgccgt	cgtgctgct	gctgctgctg	ctctggatgc	tgccggacac	120
cgtggcgctt	caggaactga	accctcgcg	ccgcaacgtg	tgccgtgctc	ccggctccca	180
ggtgccacg	tgctgcgctg	gctggaggca	gcaaggggac	gagtgtggga	ttgcgggtgtg	240
cgaaggcaac	tccacgtgct	cagagaacga	ggtgtgctg	aggcctggcg	agtgccgctg	300
cgccacggc	tacttcggtg	ccaactcgca	caccaagtgc	ccgcgccagt	tctggggccc	360
cgactgcaag	gagctgtgta	gctgccaccc	acacgggcag	tgcgaggacg	tgacaggcca	420
gtgtacttgt	cacgcgcggc	gctggggcgc	gcgctgcgag	catgcgtgcc	agtgccagca	480
cggcacgtgc	cacccccgga	gcggcgcggtg	ccgctgtgag	tccggctggg	ggggcgcgca	540
gtgcgccagc	gcgtgctact	gcagcgccac	gtgcgctgc	gacccacaga	ccggcgccctg	600
cctgtgccac	gcaggctggt	ggggccgcag	ctgcaacaac	cagtgcgcct	gcaactcgctc	660
tccctgcgag	cagcagagcg	gccgctgtca	gtgccgcgag	cgtacgttcg	gcgcgcgctg	720
cgatcgctac	tgccagtgtc	tccgcggccg	ctgccaccct	gtggacggca	cgtgtgcctg	780
cgagccgggc	taccgcggca	agtactgtcg	cgagccgtgc	ccgcgggct	tctacggctt	840
gggctgtcgc	cgccggtgtg	gccagtgcaa	ggccagcag	ccgtgcacgg	tgcccgaggg	900
ccgctgcttg	acgtgcgagc	ccggctggaa	cggaaccaag	tgcgaccagc	cttgcgccac	960
cggtttctat	ggcgagggct	gcagccaccg	ctgtccgcca	tgccgcgacg	ggcatgcctg	1020
taaccatgtc	accggcaagt	gtacgcgctg	caacgcgggc	tggtatcggcg	accggtgcga	1080
gaccaagtgt	agcaatggca	cttacggcga	ggactgcgcc	ttcgtgtgcg	ccgactgcgg	1140
cagcggacac	tgcgacttcc	agtcggggcg	ctgcctgtgc	agccctggcg	tccacggggc	1200
ccactgtaac	gtgacgtgcc	cgcccggaact	ccacggcgcg	gactgtgctc	aggcctgcag	1260
ctgccacgag	gacacgtgcg	acccggtcac	tggtgcctgc	cacctagaaa	ccaaccagcg	1320
caagggcgctg	atgggcgcgg	gcgcgctgct	cgctcctgctc	gtctgcctgc	tgctctcgct	1380

gctcggtgctgc	tgctgcgctt	gccgcgga	ggaccctacg	cgccgacccc	gccccgcag	1440
ggagctttcg	cttgggagga	agaaggcgcc	gcaccgacta	tgcgggcgct	tcagtcgcat	1500
cagcatgaag	ctgccccgga	tcccgtccg	gaggcagaaa	ctacccaaag	tcgtagtggc	1560
ccaccacgac	ctggataaca	cactcaactg	cagcttcctg	gagccaccct	cagggctgga	1620
gcagccctca	ccatcctggt	cctctcgggc	ctccttctcc	tcgtttgaca	ccactgatga	1680
aggccctgtg	tactgtgtac	cccatgagga	ggcaccagcg	gagagccggg	accccggaagt	1740
ccccactgtc	cctgccgagg	cgccggcgcc	gtccctgtg	cccttgacca	cgccagcctc	1800
cgccgaggag	gcgatacccc	tccccgcgtc	ctccgacagc	gagcggtcgg	cgtccagcgt	1860
ggagggggccc	ggagggggc	tgtacgcgcg	cgtggcccga	cgcgaggccc	ggccggggccc	1920
ggcccggggc	gagattgggg	gcctgtcgct	gtcgccatcg	cccgagcgca	ggaaaccgccc	1980
gccacctgac	cccggcacca	agcctaaggt	gtcctggatc	cacggcaagc	acagcgccgc	2040
tgcagctggc	cgtgcgccct	caccaccgccc	gccaggctcc	gaggccgcgc	ccagccccag	2100
caagaggaaa	cgga'cgccc	gcgacaaatc	ggcgcatacg	gtcgaacacg	gcagcccccg	2160
gaccgcgac	ccaacgccgc	gccccccggg	gctgcccag	gaggcgacag	ccctcgctgc	2220
gccctcgccg	cccaggggccc	gagcgcgcg	cgcgcccccg	cctcttgag	cccacggagc	2280
ccggcggtcc	cccgcgaagc	gcgcgaggc	tgcctccatg	ttggccgctg	acgtgcgcgg	2340
caagactgac	agcctggggc	cgcccgagg	ggccctgggc	gcgcagggcc	ccaggga'aaa	2400
gccggcgccc	ccacagaaag	ccaagcgctc	cgtgcccga	gcctcgcccg	cccgcgcgc	2460
cccagcgacc	gaaacccccg	ggcctgagaa	ggcgggcgacc	gacttgcccg	cgccctgagac	2520
cccccggaag	aagaccccc	tccagaagcc	gccgcgcaag	aagagccggg	aggcgccggg	2580
cgagctgggc	agggcgggcg	caccaccct	gtag			2614

<210> 43

<211> 402

<212> DNA

<213> Homo sapiens

<400> 43

atcgactgcc	gcgcgaggca	gggcccgtacg	ccgctcatgg	tgggcgtggg	gctgccggac	60
cccgcgctgc	gcgcgcgctt	cgtgcggctg	ctgctcgagc	aggggtgctgc	agtgaacctg	120
cgagacgagc	gcgggccgac	cgcactcagc	ctggcgctgc	agcgaggcca	cctggacgccc	180
gtcgagctgc	tggtgcagtt	cagcggtgac	cccgaggcgg	ccgactctgc	gggcaacagc	240
ccggtgatgt	gggcccgggc	ctgcggccac	ggggcggtgc	tcgagttcct	ggtgcggctc	300
ttccgcgcgc	taggcctgcg	cctcgaccgc	accaaccgtg	cgggggtcac	cgcgctgc'aa	360
ctggccgcgc	cccgcggcca	cgggacctgt	gtgcaggccc	tc		402

<210> 44

<211> 975

<212> DNA

<213> Homo sapiens

<400> 44

atgctcaa'ac	ccaaggacct	gtgcccccca	gcgggggacgc	gcaccttccct	ggaggccatg	60
caggcgggca	aagtgcactt	ggcccgcctc	gtgttgatg	cgctggaccg	cagcatcatc	120
gactgccgcg	cggagcaggg	ccgtacgccg	ctcatggtgg	ccgtggggct	gccggacccc	180
gcgctgcgcg	cgcgcttcgt	gcggctgctg	ctcgagcagg	gtgctgcagt	gaacctgcga	240
gacgagcgcg	gccgcaccgc	actcagcctg	gcgtgcgagc	gaggccacct	ggacgccgtg	300
cagctgctgg	tgcagttcag	cggtgacccc	gaggcgggcg	actctgcggg	caacagcccg	360
gtgatgtggg	cggcgccctg	cggccacggg	gcgggtgctcg	agttcctggt	gcggtccttc	420
cgcgcgctag	gcctgcgcct	cgaccgcacc	aaccgtgcgg	ggctcaccgc	gctgcaactg	480
gccgcgcgcc	gcggccacgg	gacctcggcg	ggcgggccacg	gcggcgaggc	tggctcagcg	540
ggcaagaatt	cgggcccggca	ccggg'cgcag	ggcagcgaa'c	ggcccagact	gggtcgggagc	600
atgagcctgg	ctctaggtgc	ggtaaccgag	gaggaggctg	cccgcctgcg	ggctggggcc	660
ctgatggccc	taccaaactc	gccccagtct	tcggggactg	ggcggtggcg	ctcacaggag	720
gtgctggagg	gagcgcccc	aaccttagcg	caagccccc	ttggcctcag	tccccaccg	780
gaggcgggcc	ccggtctg	ccgcctgggt	ttgcgcgcag	gtccacagc	cccagatata	840
cccagcctgg	tcggggaggc	gccaggggccc	gagagtggcc	cggagttaga	ggccaacgct	900
ctgtctgtct	cgggtgcctg	gccgaaccct	tggcaggcgg	gcaccgaggc	tgtggtgctg	960
cgtgctcagc	ggtaa					975

<210> 45
 <211> 568
 <212> PRT
 <213> homo sapiens

<400> 45
 Met Lys Glu Ala Glu Met Asp Gly Glu Ala Val Arg Phe Cys Thr Asp
 1 5 10 15
 Asn Gln Cys Val Ser Leu His Pro Gln Glu Val Asp Ser Val Ala Met
 20 25 30
 Ala Pro Ala Ala Pro Lys Ile Pro Arg Leu Val Gln Ala Thr Pro Ala
 35 40 45
 Phe Met Ala Val Thr Leu Val Phe Ser Leu Val Thr Leu Phe Val Val
 50 55 60
 Gly Lys Pro Pro Val Gln Gln Gln Thr Arg Pro Val Pro Lys Pro Val
 65 70 75 80
 Gln Ala Val Ile Leu Gly Asp Asn Ile Thr Gly His Leu Pro Phe Glu
 85 90 95
 Pro Asn Asn His His His Phe Gly Arg Glu Ala Glu Met Arg Glu Leu
 100 105 110
 Ile Gln Thr Phe Lys Gly His Met Glu Asn Ser Ser Ala Trp Val Val
 115 120 125
 Glu Ile Gln Met Leu Lys Cys Arg Val Asp Asn Val Asn Ser Gln Leu
 130 135 140
 Gln Val Leu Gly Asp His Leu Gly Asn Thr Asn Ala Asp Ile Gln Met
 145 150 155 160
 Val Lys Gly Val Leu Lys Asp Ala Thr Thr Leu Ser Leu Gln Thr Gln
 165 170 175
 Met Leu Arg Ser Ser Leu Glu Gly Thr Asn Ala Glu Ile Gln Arg Leu
 180 185 190
 Lys Glu Asp Leu Glu Lys Ala Asp Ala Leu Thr Phe Gln Thr Leu Asn
 195 200 205
 Phe Leu Lys Ser Ser Leu Glu Asn Thr Ser Ile Glu Leu His Val Leu
 210 215 220
 Ser Arg Gly Leu Glu Asn Ala Asn Ser Glu Ile Gln Met Leu Asn Ala
 225 230 235 240
 Arg Ala Asn Ala Glu Ile Gln Gly Leu Lys Glu Asn Leu Gln Asn Thr
 245 250 255
 Asn Ala Leu Asn Ser Gln Thr Gln Ala Phe Ile Lys Ser Ser Phe Asp
 260 265 270
 Asn Thr Ser Ala Glu Ile Gln Phe Leu Arg Gly His Leu Glu Arg Ala
 275 280 285
 Gly Asp Glu Ile His Val Leu Lys Arg Asp Leu Lys Met Val Thr Ala
 290 295 300
 Gln Thr Gln Lys Ala Asn Gly Arg Leu Asp Gln Thr Asp Thr Gln Ile
 305 310 315 320
 Gln Val Phe Lys Ser Glu Met Glu Asn Val Asn Thr Leu Asn Ala Gln
 325 330 335
 Ile Gln Val Leu Asn Gly His Met Lys Asn Ala Ser Arg Glu Ile Gln
 340 345 350
 Thr Leu Lys Gln Gly Met Lys Asn Ala Ser Ala Leu Thr Ser Gln Thr
 355 360 365
 Gln Met Leu Asp Ser Asn Leu Gln Lys Ala Ser Ala Glu Ile Gln Arg
 370 375 380
 Leu Arg Gly Asp Leu Glu Asn Thr Lys Ala Leu Thr Met Glu Ile Gln
 385 390 395 400
 Gln Glu Gln Ser Arg Leu Lys Thr Leu His Val Val Ile Thr Ser Gln
 405 410 415

Glu Gln Leu Gln Arg Thr Gln Ser Gln Leu Leu Gln Met Val Leu Gln
 420 425 430
 Gly Trp Lys Phe Asn Gly Gly Ser Leu Tyr Tyr Phe Ser Ser Val Lys
 435 440 445
 Lys Ser Trp His Glu Ala Glu Gln Phe Cys Val Ser Gln Gly Ala His
 450 455 460
 Leu Ala Ser Val Ala Ser Lys Glu Glu Gln Ala Phe Leu Val Glu Phe
 465 470 475 480
 Thr Ser Lys Val Tyr Tyr Trp Ile Gly Leu Thr Asp Arg Gly Thr Glu
 485 490 495
 Gly Ser Trp Arg Trp Thr Asp Gly Thr Pro Phe Asn Ala Ala Gln Asn
 500 505 510
 Lys Ala Pro Val Val Phe Gly Phe Trp Glu Lys Asn Gln Ser Asp Asn
 515 520 525
 Trp Arg His Lys Asn Gly Gln Thr Glu Asp Cys Val Gln Ile Gln Gln
 530 535 540
 Lys Trp Asn Asp Met Thr Cys Asp Thr Pro Tyr Gln Trp Val Cys Lys
 545 550 555 560
 Lys Pro Met Gly Gln Gly Val Ala
 565

<210> 46

<211> 364

<212> PRT

<213> homo sapiens

<400> 46

Met Ser Arg Gln Gly Lys Leu Phe Ser Ala Phe Gly Val Gly Cys Cys
 1 5 10 15
 Val Thr Ala Gly Leu Pro Lys Asp Asp Asn Thr Pro Ser Thr Ile Ala
 20 25 30
 Asp Val His Asn Gly Tyr Thr Met Asn Val Val Glu Gln Val Leu Lys
 35 40 45
 Asp Ser Phe Val Leu Phe Phe Pro Gly Thr Leu Cys Asp Phe Pro Lys
 50 55 60
 Ile His His Gly Phe Leu Tyr Asp Glu Glu Asp Tyr Asn Pro Phe Ser
 65 70 75 80
 Gln Val Pro Thr Gly Glu Val Phe Tyr Tyr Ser Cys Glu Tyr Asn Phe
 85 90 95
 Val Ser Pro Ser Lys Ser Phe Trp Thr Arg Ile Thr Cys Thr Glu Glu
 100 105 110
 Gly Trp Ser Pro Thr Pro Lys Cys Leu Arg Met Cys Ser Phe Pro Phe
 115 120 125
 Val Lys Asn Gly His Ser Glu Ser Ser Gly Leu Ile His Leu Glu Gly
 130 135 140
 Asp Thr Val Gln Ile Ile Cys Asn Thr Gly Tyr Ser Leu Gln Asn Asn
 145 150 155 160
 Glu Lys Asn Ile Ser Cys Val Glu Arg Gly Trp Ser Thr Pro Pro Ile
 165 170 175
 Cys Ser Phe Thr Met Lys Thr Cys Gly Tyr Ile Pro Glu Leu Glu Tyr
 180 185 190
 Gly Tyr Val Gln Pro Ser Val Pro Pro Tyr Gln His Gly Val Ser Val
 195 200 205
 Glu Val Asn Cys Arg Asn Glu Tyr Ala Met Ile Gly Asn Asn Met Ile
 210 215 220
 Thr Cys Ile Asn Gly Ile Trp Thr Glu Leu Pro Met Cys Val Glu Ser
 225 230 235 240
 Thr Ala Tyr Cys Gly Pro Pro Pro Ser Ile Asn Asn Gly Asp Thr Thr

245 250 255
 Ser Phe Pro Leu Ser Val Tyr Pro Pro Gly Ser Thr Val Thr Tyr Arg
 260 265 270
 Cys Gln Ser Phe Tyr Lys Leu Gln Gly Ser Val Thr Val Thr Cys Arg
 275 280 285
 Asn Lys Gln Trp Ser Glu Pro Pro Arg Cys Leu Asp Pro Cys Val Val
 290 295 300
 Ser Glu Glu Asn Met Asn Lys Asn Asn Ile Gln Leu Lys Trp Arg Asn
 305 310 315 320
 Asp Gly Lys Leu Tyr Ala Lys Thr Gly Asp Ala Val Glu Phe Gln Cys
 325 330 335
 Lys Phe Pro His Lys Ala Met Ile Ser Ser Pro Pro Phe Arg Ala Ile
 340 345 350
 Cys Gln Glu Gly Lys Phe Glu Tyr Pro Ile Cys Glu
 355 360

<210> 47
 <211> 327
 <212> PRT
 <213> homo sapiens

<400> 47
 Met Leu Leu Leu Phe Ser Val Ile Leu Ile Ser Trp Val Ser Thr Val
 1 5 10 15
 Gly Gly Glu Gly Thr Leu Cys Asp Phe Pro Lys Ile His His Gly Phe
 20 25 30
 Leu Tyr Asp Glu Glu Asp Tyr Asn Pro Phe Ser Gln Val Pro Thr Gly
 35 40 45
 Glu Val Phe Tyr Tyr Ser Cys Glu Tyr Asn Phe Val Ser Pro Ser Lys
 50 55 60
 Ser Phe Trp Thr Arg Ile Thr Cys Thr Glu Glu Gly Trp Ser Pro Thr
 65 70 75 80
 Pro Lys Cys Leu Arg Met Cys Ser Phe Pro Phe Val Lys Asn Gly His
 85 90 95
 Ser Glu Ser Ser Gly Leu Ile His Leu Glu Gly Asp Thr Val Gln Ile
 100 105 110
 Ile Cys Asn Thr Gly Tyr Ser Leu Gln Asn Asn Glu Lys Asn Ile Ser
 115 120 125
 Cys Val Glu Arg Gly Trp Ser Thr Pro Pro Ile Cys Ser Phe Thr Met
 130 135 140
 Lys Thr Cys Gly Tyr Ile Pro Glu Leu Glu Tyr Gly Tyr Val Gln Pro
 145 150 155 160
 Ser Val Pro Pro Tyr Gln His Gly Val Ser Val Glu Val Asn Cys Arg
 165 170 175
 Asn Glu Tyr Ala Met Ile Gly Asn Asn Met Ile Thr Cys Ile Asn Gly
 180 185 190
 Ile Trp Thr Glu Leu Pro Met Cys Val Glu Ser Thr Ala Tyr Cys Gly
 195 200 205
 Pro Pro Ser Ile Asn Asn Gly Asp Thr Thr Ser Phe Pro Leu Ser
 210 215 220
 Val Tyr Pro Pro Gly Ser Thr Val Thr Tyr Arg Cys Gln Ser Phe Tyr
 225 230 235 240
 Lys Leu Gln Gly Ser Val Thr Val Thr Cys Arg Asn Lys Gln Trp Ser
 245 250 255
 Glu Pro Pro Arg Cys Leu Asp Pro Cys Val Val Ser Glu Glu Asn Met
 260 265 270
 Asn Lys Asn Asn Ile Gln Leu Lys Trp Arg Asn Asp Gly Lys Leu Tyr
 275 280 285

Ala Lys Thr Gly Asp Ala Val Glu Phe Gln Cys Lys Phe Pro His Lys
 290 295 300
 Ala Met Ile Ser Ser Pro Pro Phe Arg Ala Ile Cys Gln Glu Gly Lys
 305 310 315 320
 Phe Glu Tyr Pro Ile Cys Glu
 325

<210> 48
 <211> 154
 <212> PRT
 <213> homo sapiens

<400> 48
 Met Ala Pro Ala Arg Ala Gly Cys Cys Pro Leu Leu Leu Leu Leu Leu
 1 5 10 15
 Gly Leu Trp Val Ala Glu Val Leu Val Arg Ala Lys Pro Lys Asp Met
 20 25 30
 Thr Ser Ser Gln Trp Phe Lys Thr Gln His Val Gln Pro Ser Pro Gln
 35 40 45
 Ala Cys Asn Ser Ala Met Ser Ile Ile Asn Lys Tyr Thr Glu Arg Cys
 50 55 60
 Lys Asp Leu Asn Thr Phe Leu His Glu Pro Phe Ser Ser Val Ala Ile
 65 70 75 80
 Thr Cys Gln Thr Pro Asn Ile Ala Cys Lys Asn Ser Cys Lys Asn Cys
 85 90 95
 His Gln Ser His Gly Pro Met Ser Leu Thr Met Gly Glu Leu Thr Ser
 100 105 110
 Gly Lys Tyr Pro Asn Cys Arg Tyr Lys Glu Lys His Leu Asn Thr Pro
 115 120 125
 Tyr Ile Val Ala Cys Asp Pro Pro Gln Gln Gly Asp Pro Gly Tyr Pro
 130 135 140
 Leu Val Pro Val His Leu Asp Lys Val Val
 145 150

<210> 49
 <211> 502
 <212> PRT
 <213> homo sapiens

<400> 49
 Met Arg Gln Leu Gly Gly Ser Leu Arg Pro Pro Arg Ala Ala His Gly
 1 5 10 15
 Ala Glu Pro Leu Pro Ser Ala Leu Gly Pro Cys Ala Gly Gly Asp Arg
 20 25 30
 Asp Leu Gly Arg Gly Thr Pro Gly Trp Glu Pro Arg Arg Ala Arg Val
 35 40 45
 Pro Ile His Glu Gln Val Asp Pro Pro Arg Glu Gly Pro His Leu Phe
 50 55 60
 Gln Asn Leu Leu Leu Phe Leu Trp Ala Leu Leu Asn Cys Gly Leu Gly
 65 70 75 80
 Val Ser Ala Gln Gly Pro Gly Glu Trp Thr Pro Trp Val Ser Trp Thr
 85 90 95
 Arg Cys Ser Ser Ser Cys Gly Arg Gly Val Ser Val Arg Ser Arg Arg
 100 105 110
 Cys Leu Arg Leu Pro Gly Glu Glu Pro Cys Trp Gly Asp Ser His Glu
 115 120 125
 Tyr Arg Leu Cys Gln Leu Pro Asp Cys Pro Pro Gly Ala Val Pro Phe

130 135 140
 Arg Asp Leu Gln Cys Ala Leu Tyr Asn Gly Arg Pro Val Leu Gly Thr
 145 150 155 160
 Gln Lys Thr Tyr Gln Trp Val Pro Phe His Gly Ala Pro Asn Gln Cys
 165 170 175
 Asp Leu Asn Cys Leu Ala Glu Gly His Ala Phe Tyr His Ser Phe Gly
 180 185 190
 Arg Val Leu Asp Gly Thr Ala Cys Ser Pro Gly Ala Gln Gly Val Cys
 195 200 205
 Val Ala Gly Arg Cys Leu Ser Ala Gly Cys Asp Gly Leu Leu Gly Ser
 210 215 220
 Gly Ala Leu Glu Asp Arg Cys Gly Arg Cys Gly Ala Asn Asp Ser
 225 230 235 240
 Cys Leu Phe Val Gln Arg Val Phe Arg Asp Ala Gly Ala Phe Ala Gly
 245 250 255
 Tyr Trp Asn Val Thr Leu Ile Pro Glu Gly Ala Arg His Ile Arg Val
 260 265 270
 Glu His Arg Ser Arg Asn His Leu Gly Ile Leu Gly Ser Leu Met Gly
 275 280 285
 Gly Asp Gly Arg Tyr Val Leu Asn Gly His Trp Val Val Ser Pro Pro
 290 295 300
 Gly Thr Tyr Glu Ala Ala Gly Thr His Val Val Tyr Thr Arg Asp Thr
 305 310 315 320
 Gly Pro Gln Glu Thr Leu Gln Ala Ala Gly Pro Thr Ser His Asp Leu
 325 330 335
 Leu Leu Gln Val Leu Leu Gln Glu Pro Asn Pro Gly Ile Glu Phe Glu
 340 345 350
 Phe Trp Leu Pro Arg Glu Arg Tyr Ser Pro Phe Gln Ala Arg Val Gln
 355 360 365
 Ala Leu Gly Trp Pro Leu Arg Gln Pro Gln Pro Arg Gly Val Glu Pro
 370 375 380
 Gln Pro Pro Ala Ala Pro Ala Val Thr Pro Ala Gln Thr Pro Thr Leu
 385 390 395 400
 Ala Pro Val Phe Gln Ala Arg Val Leu Gly His His His Gln Ala Gln
 405 410 415
 Glu Thr Arg Tyr Glu Val Arg Ile Gln Leu Val Tyr Lys Asn Arg Ser
 420 425 430
 Pro Leu Arg Ala Arg Glu Tyr Val Trp Ala Pro Gly His Cys Pro Cys
 435 440 445
 Pro Met Leu Ala Pro His Arg Asp Tyr Leu Met Ala Val Gln Arg Leu
 450 455 460
 Val Ser Pro Asp Gly Thr Gln Asp Gln Leu Leu Leu Pro His Ala Gly
 465 470 475 480
 Tyr Ala Arg Pro Trp Ser Pro Ala Glu Asp Ser Arg Ile Arg Leu Thr
 485 490 495
 Ala Arg Arg Cys Pro Gly
 500

<210> 50
 <211> 451
 <212> PRT
 <213> homo sapiens

<400> 50
 Met Asp Ser Ala Pro Leu Phe Pro Arg Pro His Leu Phe Gln Asn Leu
 1 5 10 15
 Leu Leu Phe Leu Trp Ala Leu Leu Asn Cys Gly Leu Gly Val Ser Ala
 20 25 30

Gln Gly Pro Gly Glu Trp Thr Pro Trp Val Ser Trp Thr Arg Cys Ser
 35 40 45
 Ser Ser Cys Gly Arg Gly Val Ser Val Arg Ser Arg Arg Cys Leu Arg
 50 55 60
 Leu Pro Gly Glu Glu Pro Cys Trp Gly Asp Ser His Glu Tyr Arg Leu
 65 70 75 80
 Cys Gln Leu Pro Asp Cys Pro Pro Gly Ala Val Pro Phe Arg Asp Leu
 85 90 95
 Gln Cys Ala Leu Tyr Asn Gly Arg Pro Val Leu Gly Thr Gln Lys Thr
 100 105 110
 Tyr Gln Trp Val Pro Phe His Gly Ala Pro Asn Gln Cys Asp Leu Asn
 115 120 125
 Cys Leu Ala Glu Gly His Ala Phe Tyr His Ser Phe Gly Arg Val Leu
 130 135 140
 Asp Gly Thr Ala Cys Ser Pro Gly Ala Gln Gly Val Cys Val Ala Gly
 145 150 155 160
 Arg Cys Leu Ser Ala Gly Cys Asp Gly Leu Leu Gly Ser Gly Ala Leu
 165 170 175
 Glu Asp Arg Cys Gly Arg Cys Gly Gly Ala Asn Asp Ser Cys Leu Phe
 180 185 190
 Val Gln Arg Val Phe Arg Asp Ala Gly Ala Phe Ala Gly Tyr Trp Asn
 195 200 205
 Val Thr Leu Ile Pro Glu Gly Ala Arg His Ile Arg Val Glu His Arg
 210 215 220
 Ser Arg Asn His Leu Gly Ile Leu Gly Ser Leu Met Gly Gly Asp Gly
 225 230 235 240
 Arg Tyr Val Leu Asn Gly His Trp Val Val Ser Pro Pro Gly Thr Tyr
 245 250 255
 Glu Ala Ala Gly Thr His Val Val Tyr Thr Arg Asp Thr Gly Pro Gln
 260 265 270
 Glu Thr Leu Gln Ala Ala Gly Pro Thr Ser His Asp Leu Leu Leu Gln
 275 280 285
 Val Leu Leu Gln Glu Pro Asn Pro Gly Ile Glu Phe Glu Phe Trp Leu
 290 295 300
 Pro Arg Glu Arg Tyr Ser Pro Phe Gln Ala Arg Val Gln Ala Leu Gly
 305 310 315 320
 Trp Pro Leu Arg Gln Pro Gln Pro Arg Gly Val Glu Pro Gln Pro Pro
 325 330 335
 Ala Ala Pro Ala Val Thr Pro Ala Gln Thr Pro Thr Leu Ala Pro Val
 340 345 350
 Phe Gln Ala Arg Val Leu Gly His His His Gln Ala Gln Glu Thr Arg
 355 360 365
 Tyr Glu Val Arg Ile Gln Leu Val Tyr Lys Asn Arg Ser Pro Leu Arg
 370 375 380
 Ala Arg Glu Tyr Val Trp Ala Pro Gly His Cys Pro Cys Pro Met Leu
 385 390 395 400
 Ala Pro His Arg Asp Tyr Leu Met Ala Val Gln Arg Leu Val Ser Pro
 405 410 415
 Asp Gly Thr Gln Asp Gln Leu Leu Leu Pro His Ala Gly Tyr Ala Arg
 420 425 430
 Pro Trp Ser Pro Ala Glu Asp Ser Arg Ile Arg Leu Thr Ala Arg Arg
 435 440 445
 Cys Pro Gly
 450

<210> 51
 <211> 431
 <212> PRT

<213> homo sapiens

<400> 51

```

Met Ile Arg Thr Pro Leu Ser Ala Ser Ala His Arg Leu Leu Leu Pro
 1           5           10           15
Gly Ser Arg Gly Arg Pro Pro Arg Asn Met Gln Pro Thr Gly Arg Glu
          20           25           30
Gly Ser Arg Ala Leu Ser Arg Arg Tyr Leu Arg Arg Leu Leu Leu Leu
          35           40           45
Leu Leu Leu Leu Leu Leu Arg Gln Pro Val Thr Arg Ala Glu Thr Thr
          50           55           60
Pro Gly Ala Pro Arg Ala Leu Ser Thr Leu Gly Ser Pro Ser Leu Phe
65          70          75          80
Thr Thr Pro Gly Val Pro Ser Ala Leu Thr Thr Pro Gly Leu Thr Thr
          85          90          95
Pro Gly Thr Pro Lys Thr Leu Asp Leu Arg Gly Arg Ala Gln Ala Leu
          100          105          110
Met Arg Ser Phe Pro Leu Val Asp Gly Tyr Val Gly Leu Asn Ser Ser
          115          120          125
Gln Lys Leu Ala Cys Leu Ile Gly Val Glu Gly Gly His Ser Leu Asp
130          135          140
Ser Ser Leu Ser Val Leu Arg Ser Phe Tyr Val Leu Gly Val Arg Tyr
145          150          155          160
Leu Thr Leu Thr Phe Thr Cys Ser Thr Pro Trp Ala Glu Ser Ser Thr
          165          170          175
Lys Phe Arg His His Met Tyr Thr Asn Val Ser Gly Leu Thr Ser Phe
          180          185          190
Gly Glu Lys Val Val Glu Glu Leu Asn Arg Leu Gly Met Met Ile Asp
          195          200          205
Leu Ser Tyr Ala Ser Asp Thr Leu Ile Arg Arg Val Leu Glu Val Ser
210          215          220
Gln Ala Pro Val Ile Phe Ser His Ser Ala Ala Arg Ala Val Cys Asp
225          230          235          240
Asn Leu Leu Asn Val Pro Asp Asp Ile Leu Gln Leu Leu Lys Lys Asn
          245          250          255
Gly Gly Ile Val Met Val Thr Leu Ser Met Gly Val Leu Gln Cys Asn
          260          265          270
Leu Leu Ala Asn Val Ser Thr Val Ala Asp Asp Ser Asn Arg Cys Ser
          275          280          285
Val Pro Val Ile Gly Ser Glu Phe Ile Gly Ile Gly Gly Asn Tyr Asp
          290          295          300
Gly Thr Gly Arg Phe Pro Gln Gly Leu Glu Asp Val Ser Thr Tyr Pro
305          310          315          320
Val Leu Ile Glu Glu Leu Leu Ser Arg Ser Trp Ser Glu Glu Glu Leu
          325          330          335
Gln Gly Val Leu Arg Gly Asn Leu Leu Arg Val Phe Arg Gln Val Glu
          340          345          350
Lys Val Arg Glu Glu Ser Arg Ala Gln Ser Pro Val Glu Ala Glu Phe
          355          360          365
Pro Tyr Gly Gln Leu Ser Thr Ser Cys His Ser His Leu Val Pro Gln
          370          375          380
Asn Gly His Gln Ala Thr His Leu Glu Val Thr Lys Gln Pro Thr Asn
385          390          395          400
Arg Val Pro Trp Arg Ser Ser Asn Ala Ser Pro Tyr Leu Val Pro Gly
          405          410          415
Leu Val Ala Ala Ala Thr Ile Pro Thr Phe Thr Gln Trp Leu Cys
          420          425          430

```


<210> 52
 <211> 480
 <212> PRT
 <213> homo sapiens

<400> 52

```

Met Gln Pro Ser Gly Leu Glu Gly Pro Gly Thr Phe Gly Arg Trp Pro
1      5      10      15
Leu Leu Ser Leu Leu Leu Leu Leu Leu Leu Gln Pro Val Thr Cys
20      25      30
Ala Tyr Thr Thr Pro Gly Pro Pro Arg Ala Leu Thr Thr Leu Gly Ala
35      40      45
Pro Arg Ala His Thr Met Pro Gly Thr Tyr Ala Pro Ser Thr Thr Leu
50      55      60
Ser Ser Pro Ser Thr Gln Gly Leu Gln Glu Gln Ala Arg Ala Leu Met
65      70      75      80
Arg Asp Phe Pro Leu Val Asp Gly His Asn Asp Leu Pro Leu Val Leu
85      90      95
Arg Gln Val Tyr Gln Lys Gly Leu Gln Asp Val Asn Leu Arg Asn Phe
100     105     110
Ser Tyr Gly Gln Thr Ser Leu Asp Arg Leu Arg Asp Gly Leu Val Gly
115     120     125
Ala Gln Phe Trp Ser Ala Tyr Val Pro Cys Gln Thr Gln Asp Arg Asp
130     135     140
Ala Leu Arg Leu Thr Leu Glu Gln Ile Asp Leu Ile Arg Arg Met Cys
145     150     155     160
Ala Ser Tyr Ser Glu Leu Glu Leu Val Thr Ser Ala Lys Gly Leu Asn
165     170     175
Ser Ser Gln Lys Leu Ala Cys Leu Ile Gly Val Glu Gly Gly His Ser
180     185     190
Leu Asp Ser Ser Leu Ser Val Leu Arg Ser Phe Tyr Val Leu Gly Val
195     200     205
Arg Tyr Leu Thr Leu Thr Phe Thr Cys Ser Thr Pro Trp Ala Glu Ser
210     215     220
Ser Thr Lys Phe Arg His His Met Tyr Thr Asn Val Ser Gly Leu Thr
225     230     235     240
Ser Phe Gly Glu Lys Val Val Glu Glu Leu Asn Arg Leu Gly Met Met
245     250     255
Ile Asp Leu Ser Tyr Ala Ser Asp Thr Leu Ile Arg Arg Val Leu Glu
260     265     270
Val Ser Gln Ala Pro Val Ile Phe Ser His Ser Ala Ala Arg Ala Val
275     280     285
Cys Asp Asn Leu Leu Asn Val Pro Asp Asp Ile Leu Gln Leu Leu Lys
290     295     300
Lys Asn Gly Gly Ile Val Met Val Thr Leu Ser Met Gly Val Leu Gln
305     310     315     320
Cys Asn Leu Leu Ala Asn Val Ser Thr Val Ala Asp His Phe Asp His
325     330     335
Ile Arg Ala Val Ile Gly Ser Glu Phe Ile Gly Ile Gly Gly Asn Tyr
340     345     350
Asp Gly Thr Gly Arg Phe Pro Gln Gly Leu Glu Asp Val Ser Thr Tyr
355     360     365
Pro Val Leu Ile Glu Glu Leu Leu Ser Arg Ser Trp Ser Glu Glu Glu
370     375     380
Leu Gln Gly Val Leu Arg Gly Asn Leu Leu Arg Val Phe Arg Gln Val
385     390     395     400
Glu Lys Val Arg Glu Glu Ser Arg Ala Gln Ser Pro Val Glu Ala Glu
405     410     415
Phe Pro Tyr Gly Gln Leu Ser Thr Ser Cys His Ser His Leu Val Pro

```

420 425 430
 Gln Asn Gly His Gln Ala Thr His Leu Glu Val Thr Lys Gln Pro Thr
 435 440 445
 Asn Arg Val Pro Trp Arg Ser Ser Asn Ala Ser Pro Tyr Leu Val Pro
 450 455 460
 Gly Leu Val Ala Ala Ala Thr Ile Pro Thr Phe Thr Gln Trp Leu Cys
 465 470 475 480

<210> 53
 <211> 371
 <212> PRT
 <213> homo sapiens

<400> 53
 Met Asp Ala Ala Thr Ala Pro Lys Gln Ala Trp Pro Pro Trp Pro Pro
 1 5 10 15
 Leu Leu Phe Leu Leu Leu Pro Gly Gly Ser Gly Gly Ser Cys Pro
 20 25 30
 Ala Val Cys Asp Cys Thr Ser Gln Pro Gln Ala Val Leu Cys Gly His
 35 40 45
 Arg Gln Leu Glu Ala Val Pro Gly Gly Leu Pro Leu Asp Thr Glu Leu
 50 55 60
 Leu Asp Leu Ser Gly Asn Arg Leu Pro Lys Ala Gln Pro Leu Val Arg
 65 70 75 80
 Leu Gln Glu Leu Arg Leu Ser Gly Ala Cys Leu Thr Ser Ile Ala Ala
 85 90 95
 His Ala Phe His Gly Leu Thr Ala Phe His Leu Leu Asp Val Ala Asp
 100 105 110
 Asn Ala Leu Gln Thr Leu Glu Glu Thr Ala Phe Pro Ser Pro Asp Lys
 115 120 125
 Leu Val Thr Leu Arg Leu Ser Gly Asn Pro Leu Thr Cys Asp Cys Arg
 130 135 140
 Leu Leu Trp Leu Leu Arg Leu Arg His Leu Asp Phe Gly Met Ser Pro
 145 150 155 160
 Pro Ala Cys Ala Gly Pro His His Val Gln Gly Lys Ser Leu Lys Glu
 165 170 175
 Phe Ser Asp Ile Leu Pro Pro Gly His Phe Thr Cys Lys Pro Ala Leu
 180 185 190
 Ile Arg Lys Ser Gly Pro Arg Trp Val Ile Ala Glu Glu Gly Gly His
 195 200 205
 Ala Val Phe Ser Cys Ser Gly Asp Gly Asp Pro Ala Pro Thr Val Ser
 210 215 220
 Trp Met Arg Pro His Gly Ala Trp Leu Gly Arg Ala Gly Arg Val Arg
 225 230 235 240
 Val Leu Glu Asp Gly Thr Leu Glu Ile Arg Ser Val Gln Leu Arg Asp
 245 250 255
 Arg Gly Ala Tyr Val Cys Val Val Ser Asn Val Ala Gly Asn Asp Ser
 260 265 270
 Leu Arg Thr Trp Leu Glu Val Ile Gln Val Glu Pro Pro Asn Gly Thr
 275 280 285
 Leu Ser Asp Pro Asn Ile Thr Val Pro Gly Ile Pro Gly Pro Phe Phe
 290 295 300
 Leu Asp Ser Arg Gly Val Ala Met Val Leu Ala Val Gly Phe Leu Pro
 305 310 315 320
 Phe Leu Thr Ser Val Thr Leu Cys Phe Gly Leu Ile Ala Leu Trp Ser
 325 330 335
 Lys Gly Lys Gly Arg Val Lys His His Met Thr Phe Asp Phe Val Ala
 340 345 350

Pro Arg Pro Ser Gly Asp Lys Asn Ser Gly Gly Asn Arg Val Thr Ala
 355 360 365
 Lys Leu Phe
 370

<210> 54
 <211> 592
 <212> PRT
 <213> homo sapiens

<400> 54
 Met Asp Ala Ala Thr Ala Pro Lys Gln Ala Trp Pro Pro Trp Pro Pro
 1 5 10 15
 Leu Leu Phe Leu Leu Leu Pro Gly Gly Ser Gly Gly Ser Cys Pro
 20 25 30
 Ala Val Cys Asp Cys Thr Ser Gln Pro Gln Ala Val Leu Cys Gly His
 35 40 45
 Arg Gln Leu Glu Ala Val Pro Gly Gly Leu Pro Leu Asp Thr Glu Leu
 50 55 60
 Leu Asp Leu Ser Gly Asn Arg Leu Trp Gly Leu Gln Gln Gly Met Leu
 65 70 75 80
 Ser Arg Leu Ser Leu Leu Gln Glu Leu Asp Leu Ser Tyr Asn Gln Leu
 85 90 95
 Ser Thr Leu Glu Pro Gly Ala Phe His Gly Leu Gln Ser Leu Leu Thr
 100 105 110
 Leu Arg Leu Gln Gly Asn Arg Leu Arg Ile Met Gly Pro Gly Val Phe
 115 120 125
 Ser Gly Leu Ser Ala Leu Thr Leu Leu Asp Leu Arg Leu Asn Gln Ile
 130 135 140
 Val Leu Phe Leu Asp Gly Ala Phe Gly Glu Leu Gly Ser Leu Gln Lys
 145 150 155 160
 Leu Glu Val Gly Asp Asn His Leu Val Phe Val Ala Pro Gly Ala Phe
 165 170 175
 Ala Gly Leu Ala Lys Leu Ser Thr Leu Thr Leu Glu Arg Cys Asn Leu
 180 185 190
 Ser Thr Val Pro Gly Leu Ala Leu Ala Arg Leu Pro Ala Leu Val Ala
 195 200 205
 Leu Arg Leu Arg Glu Leu Asp Ile Gly Arg Leu Pro Ala Gly Ala Leu
 210 215 220
 Arg Gly Leu Gly Gln Leu Lys Glu Leu Glu Ile His Leu Trp Pro Ser
 225 230 235 240
 Leu Glu Ala Leu Asp Pro Gly Ser Leu Val Gly Leu Asn Leu Ser Ser
 245 250 255
 Leu Ala Ile Thr Arg Cys Asn Leu Ser Ser Val Pro Phe Gln Ala Leu
 260 265 270
 Tyr His Leu Ser Phe Leu Arg Val Leu Asp Leu Ser Gln Asn Pro Ile
 275 280 285
 Ser Ala Ile Pro Ala Arg Arg Leu Ser Pro Leu Val Arg Leu Gln Glu
 290 295 300
 Leu Arg Leu Ser Gly Ala Cys Leu Thr Ser Ile Ala Ala His Ala Phe
 305 310 315 320
 His Gly Leu Thr Ala Phe His Leu Leu Asp Val Ala Asp Asn Ala Leu
 325 330 335
 Gln Thr Leu Glu Thr Ala Phe Pro Ser Pro Asp Lys Leu Val Thr
 340 345 350
 Leu Arg Leu Ser Gly Asn Pro Leu Thr Cys Asp Cys Arg Leu Leu Trp
 355 360 365
 Leu Leu Arg Leu Arg His Leu Asp Phe Gly Met Ser Pro Pro Ala Cys

370 375 380
 Ala Gly Pro His His Val Gln Gly Lys Ser Leu Lys Glu Phe Ser Asp
 385 390 395 400
 Ile Leu Pro Pro Gly His Phe Thr Cys Lys Pro Ala Leu Ile Arg Lys
 405 410 415
 Ser Gly Pro Arg Trp Val Ile Ala Glu Glu Gly Gly His Ala Val Phe
 420 425 430
 Ser Cys Ser Gly Asp Gly Asp Pro Ala Pro Thr Val Ser Trp Met Arg
 435 440 445
 Pro His Gly Ala Trp Leu Gly Arg Ala Gly Arg Val Arg Val Leu Glu
 450 455 460
 Asp Gly Thr Leu Glu Ile Arg Ser Val Gln Leu Arg Asp Arg Gly Ala
 465 470 475 480
 Tyr Val Cys Val Val Ser Asn Val Ala Gly Asn Asp Ser Leu Arg Thr
 485 490 495
 Trp Leu Glu Val Ile Gln Val Glu Pro Pro Asn Gly Thr Leu Ser Asp
 500 505 510
 Pro Asn Ile Thr Val Pro Gly Ile Pro Gly Pro Phe Phe Leu Asp Ser
 515 520 525
 Arg Gly Val Ala Met Val Leu Ala Val Gly Phe Leu Pro Phe Leu Thr
 530 535 540
 Ser Val Thr Leu Cys Phe Gly Leu Ile Ala Leu Trp Ser Lys Gly Lys
 545 550 555 560
 Gly Arg Val Lys His His Met Thr Phe Asp Phe Val Ala Pro Arg Pro
 565 570 575
 Ser Gly Asp Lys Asn Ser Gly Gly Asn Arg Val Thr Ala Lys Leu Phe
 580 585 590

<210> 55
 <211> 142
 <212> PRT
 <213> homo sapiens

<400> 55
 Met Ala Arg Tyr Met Leu Leu Leu Leu Leu Ala Val Trp Val Leu Thr
 1 5 10 15
 Gly Glu Leu Trp Pro Gly Ala Glu Ala Arg Ala Ala Pro Tyr Gly Val
 20 25 30
 Arg Leu Cys Gly Arg Glu Phe Ile Arg Ala Val Ile Phe Thr Cys Gly
 35 40 45
 Gly Ser Arg Trp Arg Arg Ser Asp Ile Leu Ala His Glu Ala Met Gly
 50 55 60
 Asp Thr Phe Pro Asp Ala Asp Ala Asp Glu Asp Ser Leu Ala Gly Glu
 65 70 75 80
 Leu Asp Glu Ala Met Gly Ser Ser Glu Trp Leu Ala Leu Thr Lys Ser
 85 90 95
 Pro Gln Ala Phe Tyr Arg Gly Arg Pro Ser Trp Gln Gly Thr Pro Gly
 100 105 110
 Val Leu Arg Gly Ser Arg Asp Val Leu Ala Gly Leu Ser Ser Ser Cys
 115 120 125
 Cys Lys Trp Gly Cys Ser Lys Ser Glu Ile Ser Ser Leu Cys
 130 135 140

<210> 56
 <211> 230
 <212> PRT
 <213> homo sapiens

<400> 56

```

Met Ser Glu Glu Val Thr Tyr Ala Thr Leu Thr Phe Gln Asp Ser Ala
 1          5          10          15
Gly Ala Arg Asn Asn Arg Asp Gly Asn Asn Leu Arg Lys Arg Gly His
          20          25          30
Pro Ala Pro Ser Pro Ile Trp Arg His Ala Ala Leu Gly Leu Val Thr
          35          40          45
Leu Cys Leu Met Leu Leu Ile Gly Leu Val Thr Leu Gly Met Met Phe
          50          55          60
Leu Gln Ile Ser Asn Asp Ile Asn Ser Asp Ser Glu Lys Leu Ser Gln
65          70          75          80
Leu Gln Lys Thr Ile Gln Gln Gln Gln Asp Asn Leu Ser Gln Gln Leu
          85          90          95
Gly Asn Ser Asn Asn Leu Ser Met Glu Glu Glu Phe Leu Lys Ser Gln
          100          105          110
Ile Ser Ser Leu Leu Lys Arg Gln Glu Gln Met Ala Ile Lys Leu Cys
          115          120          125
Gln Glu Leu Ile Ile His Thr Ser Asp His Arg Cys Asn Pro Cys Pro
          130          135          140
Lys Met Trp Gln Trp Tyr Gln Asn Ser Cys Tyr Tyr Phe Thr Thr Asn
145          150          155          160
Glu Glu Lys Thr Trp Ala Asn Ser Arg Lys Asp Cys Ile Asp Lys Asn
          165          170          175
Ser Thr Leu Val Lys Ile Asp Ser Leu Glu Glu Lys Asp Phe Leu Met
          180          185          190
Ser Gln Pro Leu Leu Met Phe Ser Phe Phe Trp Leu Gly Leu Ser Trp
          195          200          205
Asp Ser Ser Gly Arg Ser Trp Phe Trp Glu Asp Gly Ser Val Pro Ser
          210          215          220
Pro Ser Leu Tyr Val Ser
225          230

```

<210> 57

<211> 194

<212> PRT

<213> homo sapiens

<400> 57

```

Met Trp Leu Ser Pro Ala Leu Leu Leu Leu Ile Leu Pro Gly Tyr Ser
 1          5          10          15
Ile Ala Ala Lys Ile Thr Gly Pro Thr Thr Val Asn Gly Ser Glu Gln
          20          25          30
Gly Ser Leu Thr Val Gln Cys Ala Tyr Gly Ser Gly Trp Glu Thr Tyr
          35          40          45
Leu Lys Trp Arg Cys Gln Gly Ala Asp Trp Asn Tyr Cys Asn Ile Leu
          50          55          60
Val Lys Thr Asn Gly Ser Glu Gln Glu Val Lys Lys Asn Arg Val Ser
65          70          75          80
Ile Arg Asp Asn Gln Lys Asn His Met Phe Thr Val Thr Met Glu Asn
          85          90          95
Leu Lys Arg Asp Asp Ala Asp Ser Tyr Trp Cys Gly Thr Glu Arg Pro
          100          105          110
Gly Ile Asp Leu Gly Val Lys Val Gln Val Thr Ile Asn Pro Gly Thr
          115          120          125
Gln Thr Ala Val Ser Glu Trp Thr Thr Thr Thr Ala Ser Leu Ala Phe
          130          135          140
Thr Ala Ala Ala Thr Gln Lys Thr Ser Ser Pro Leu Thr Arg Ser Pro

```

145 150 155 160
 Leu Lys Ser Thr His Phe Leu Phe Leu Phe Leu Leu Glu Leu Pro Leu
 165 170 175
 Leu Leu Ser Met Leu Gly Thr Val Leu Trp Val Asn Arg Pro Gln Arg
 180 185 190
 Arg Ser

<210> 58
 <211> 333
 <212> PRT
 <213> homo sapiens

<400> 58
 Met Arg Ile Trp Trp Leu Leu Leu Ala Ile Glu Ile Cys Thr Gly Asn
 1 5 10 15
 Ile Asn Ser Gln Asp Thr Cys Arg Gln Gly His Pro Gly Ile Pro Gly
 20 25 30
 Asn Pro Gly His Asn Gly Leu Pro Gly Arg Asp Gly Arg Asp Gly Ala
 35 40 45
 Lys Gly Asp Lys Gly Asp Ala Gly Glu Pro Gly Arg Pro Gly Ser Pro
 50 55 60
 Gly Lys Asp Gly Thr Ser Gly Glu Lys Gly Glu Arg Gly Ala Asp Gly
 65 70 75 80
 Lys Val Glu Ala Lys Gly Ile Lys Gly Asp Gln Gly Ser Arg Gly Ser
 85 90 95
 Pro Gly Lys His Gly Pro Lys Gly Leu Ala Gly Pro Met Gly Glu Lys
 100 105 110
 Gly Leu Arg Gly Glu Thr Gly Pro Gln Gly Gln Lys Gly Asn Lys Gly
 115 120 125
 Asp Val Gly Pro Thr Gly Pro Glu Gly Pro Arg Gly Asn Ile Gly Pro
 130 135 140
 Leu Gly Pro Thr Gly Leu Pro Gly Pro Met Gly Pro Ile Gly Lys Pro
 145 150 155 160
 Gly Pro Lys Gly Glu Ala Gly Pro Thr Gly Pro Gln Gly Glu Pro Gly
 165 170 175
 Val Arg Gly Ile Arg Gly Trp Lys Gly Asp Arg Gly Glu Lys Gly Lys
 180 185 190
 Ile Gly Glu Thr Leu Val Leu Pro Lys Ser Ala Phe Thr Val Gly Leu
 195 200 205
 Thr Val Leu Ser Lys Phe Pro Ser Ser Asp Met Pro Ile Lys Phe Asp
 210 215 220
 Lys Ile Leu Tyr Asn Glu Phe Asn His Tyr Asp Thr Ala Ala Gly Lys
 225 230 235 240
 Phe Thr Cys His Ile Ala Gly Val Tyr Tyr Phe Thr Tyr His Ile Thr
 245 250 255
 Val Phe Ser Arg Asn Val Gln Val Ser Leu Val Lys Asn Gly Val Lys
 260 265 270
 Ile Leu His Thr Lys Asp Ala Tyr Met Ser Ser Glu Asp Gln Ala Ser
 275 280 285
 Gly Gly Ile Val Leu Gln Leu Lys Leu Gly Asp Glu Val Trp Leu Gln
 290 295 300
 Val Thr Gly Gly Glu Arg Phe Asn Gly Leu Phe Ala Asp Glu Asp Asp
 305 310 315 320
 Asp Thr Thr Phe Thr Gly Phe Leu Leu Phe Ser Ser Pro
 325 330

<210> 59
 <211> 225
 <212> PRT
 <213> homo sapiens

<400> 59
 Met Arg Ile Trp Trp Leu Leu Leu Ala Ile Glu Ile Cys Thr Gly Asn
 1 5 10 15
 Ile Asn Ser Gln Asp Thr Cys Arg Gln Gly His Pro Gly Ile Pro Gly
 20 25 30
 Asn Pro Gly His Asn Gly Leu Pro Gly Arg Asp Gly Arg Asp Gly Ala
 35 40 45
 Lys Gly Asp Lys Gly Asp Ala Gly Glu Ala Gly Pro Thr Gly Pro Gln
 50 55 60
 Gly Glu Pro Gly Val Arg Gly Ile Arg Gly Trp Lys Gly Asp Arg Gly
 65 70 75 80
 Glu Lys Gly Lys Ile Gly Glu Thr Leu Val Leu Pro Lys Ser Ala Phe
 85 90 95
 Thr Val Gly Leu Thr Val Leu Ser Lys Phe Pro Ser Ser Asp Met Pro
 100 105 110
 Ile Lys Phe Asp Lys Ile Leu Tyr Asn Glu Phe Asn His Tyr Asp Thr
 115 120 125
 Ala Ala Gly Lys Phe Thr Cys His Ile Ala Gly Val Tyr Tyr Phe Thr
 130 135 140
 Tyr His Ile Thr Val Phe Ser Arg Asn Val Gln Val Ser Leu Val Lys
 145 150 155 160
 Asn Gly Val Lys Ile Leu His Thr Lys Asp Ala Tyr Met Ser Ser Glu
 165 170 175
 Asp Gln Ala Ser Gly Gly Ile Val Leu Gln Leu Lys Leu Gly Asp Glu
 180 185 190
 Val Trp Leu Gln Val Thr Gly Gly Glu Arg Phe Asn Gly Leu Phe Ala
 195 200 205
 Asp Glu Asp Asp Asp Thr Thr Phe Thr Gly Phe Leu Leu Phe Ser Ser
 210 215 220
 Pro
 225

<210> 60
 <211> 205
 <212> PRT
 <213> homo sapiens

<400> 60
 Met Met Arg Thr Leu Ile Thr Thr His Pro Leu Pro Leu Leu Leu Leu
 1 5 10 15
 Pro Gln Gln Leu Leu Gln Leu Val Gln Phe Gln Glu Val Asp Thr Asp
 20 25 30
 Phe Asp Phe Pro Glu Glu Asp Lys Lys Glu Glu Phe Glu Glu Cys Leu
 35 40 45
 Glu Lys Phe Phe Ser Thr Gly Pro Ala Arg Pro Pro Thr Lys Glu Lys
 50 55 60
 Val Lys Arg Arg Val Leu Ile Glu Pro Gly Met Pro Leu Asn His Ile
 65 70 75 80
 Glu Tyr Cys Asn His Glu Ile Met Gly Lys Asn Val Tyr Tyr Lys His
 85 90 95
 Arg Trp Val Ala Glu His Tyr Phe Leu Leu Met Gln Tyr Asp Glu Leu
 100 105 110
 Gln Lys Ile Cys Tyr Asn Arg Phe Val Pro Cys Lys Asn Gly Ile Arg

115 120 125
 Lys Cys Asn Arg Ser Lys Gly Leu Val Glu Gly Val Tyr Cys Asn Leu
 130 135 140
 Thr Glu Ala Phe Glu Ile Pro Ala Cys Lys Tyr Glu Ser Leu Tyr Arg
 145 150 155 160
 Lys Gly Tyr Val Leu Ile Thr Cys Ser Trp Gln Asn Glu Met Gln Lys
 165 170 175
 Arg Ile Pro His Thr Ile Asn Asp Leu Val Glu Pro Pro Glu His Arg
 180 185 190
 Ser Phe Leu Ser Glu Asp Gly Val Phe Val Ile Ser Pro
 195 200 205

<210> 61
 <211> 95
 <212> PRT
 <213> homo sapiens

<400> 61
 Met Glu Val Val Leu Ile Phe Leu Cys Ser Leu Leu Ala His Ile Val
 1 5 10 15
 Leu Ala Asp Ala Val Glu Arg Glu Lys Gln Ile Asp Pro Phe His Tyr
 20 25 30
 Asp Tyr Gln Thr Leu Arg Ile Arg Gly Leu Val Cys Ala Val Val Leu
 35 40 45
 Phe Ser Ile Gly Ile Leu Leu Ile Leu Gly Cys Arg Cys Lys Cys Ser
 50 55 60
 Phe Asn Gln Lys Pro Arg Thr Pro Gly Glu Glu Glu Ala Gln Val Glu
 65 70 75 80
 Asn Leu Ile Thr Ala Asn Ala Thr Lys Leu Gln Lys Ala Glu Ser
 85 90 95

<210> 62
 <211> 595
 <212> PRT
 <213> homo sapiens

<400> 62
 Met Glu Val Gly Met Gly Cys Trp Ala Arg Glu Val Leu Val Pro Glu
 1 5 10 15
 Gly Pro Leu Tyr Arg Val Ala Gly Thr Ala Val Ser Ile Ser Cys Asn
 20 25 30
 Val Thr Gly Tyr Glu Gly Pro Ala Gln Gln Asn Phe Glu Trp Phe Leu
 35 40 45
 Tyr Arg Pro Glu Ala Pro Asp Thr Ala Leu Gly Ile Val Ser Thr Lys
 50 55 60
 Asp Thr Gln Phe Ser Tyr Ala Val Phe Lys Ser Arg Val Val Ala Gly
 65 70 75 80
 Glu Val Gln Val Gln Arg Leu Gln Gly Asp Ala Val Val Leu Lys Ile
 85 90 95
 Ala Arg Leu Gln Ala Gln Asp Ala Gly Ile Tyr Glu Cys His Thr Pro
 100 105 110
 Ser Thr Asp Thr Arg Tyr Leu Gly Ser Tyr Ser Gly Lys Val Glu Leu
 115 120 125
 Arg Val Leu Pro Asp Val Leu Gln Val Ser Ala Ala Pro Pro Gly Pro
 130 135 140
 Arg Gly Arg Gln Ala Pro Thr Ser Pro Pro Arg Met Thr Val His Glu
 145 150 155 160

Gly Gln Glu Leu Ala Leu Gly Cys Leu Ala Arg Thr Ser Thr Gln Lys
 165 170 175
 His Thr His Leu Ala Val Ser Phe Gly Arg Ser Val Pro Glu Ala Pro
 180 185 190
 Val Gly Arg Ser Thr Leu Gln Glu Val Val Gly Ile Arg Ser Asp Leu
 195 200 205
 Ala Val Glu Ala Gly Ala Pro Tyr Ala Glu Arg Leu Ala Ala Gly Glu
 210 215 220
 Leu Arg Leu Gly Lys Glu Gly Thr Asp Arg Tyr Arg Met Val Val Gly
 225 230 235 240
 Gly Ala Gln Ala Gly Asp Ala Gly Thr Tyr His Cys Thr Ala Ala Glu
 245 250 255
 Trp Ile Gln Asp Pro Asp Gly Ser Trp Ala Gln Ile Ala Glu Lys Arg
 260 265 270
 Ala Val Leu Ala His Val Asp Val Gln Thr Leu Ser Ser Gln Leu Ala
 275 280 285
 Val Thr Val Gly Pro Gly Glu Arg Arg Ile Gly Pro Gly Glu Pro Leu
 290 295 300
 Glu Leu Leu Cys Asn Val Ser Gly Ala Leu Pro Pro Ala Gly Arg His
 305 310 315 320
 Ala Ala Tyr Ser Val Gly Trp Glu Met Ala Pro Ala Gly His Leu Gly
 325 330 335
 Pro Gly Arg Leu Val Ala Gln Leu Asp Thr Glu Gly Val Gly Ser Leu
 340 345 350
 Gly Pro Gly Tyr Glu Gly Arg His Ile Ala Met Glu Lys Val Ala Ser
 355 360 365
 Arg Thr Tyr Arg Leu Arg Leu Glu Ala Ala Arg Pro Gly Asp Ala Gly
 370 375 380
 Thr Tyr Arg Cys Leu Ala Lys Ala Tyr Val Arg Gly Ser Gly Thr Arg
 385 390 395 400
 Leu Arg Glu Ala Ala Ser Ala Arg Ser Arg Pro Leu Pro Val His Val
 405 410 415
 Arg Glu Glu Gly Val Val Leu Glu Ala Val Ala Trp Leu Ala Gly Gly
 420 425 430
 Thr Val Tyr Arg Gly Glu Thr Ala Ser Leu Leu Cys Asn Ile Ser Val
 435 440 445
 Arg Gly Gly Pro Pro Gly Leu Arg Leu Ala Ala Ser Trp Trp Val Glu
 450 455 460
 Arg Pro Glu Asp Gly Glu Leu Ser Ser Val Pro Ala Gln Leu Val Gly
 465 470 475 480
 Gly Val Gly Gln Asp Gly Val Ala Glu Leu Gly Val Arg Pro Gly Gly
 485 490 495
 Gly Pro Val Ser Val Glu Leu Val Gly Pro Arg Ser His Arg Leu Arg
 500 505 510
 Leu His Ser Leu Gly Pro Glu Asp Glu Gly Val Tyr His Cys Ala Pro
 515 520 525
 Ser Ala Trp Val Gln His Ala Asp Tyr Ser Trp Tyr Gln Ala Gly Ser
 530 535 540
 Ala Arg Ser Gly Pro Val Thr Val Tyr Pro Tyr Met His Ala Leu Asp
 545 550 555 560
 Thr Leu Phe Val Pro Leu Leu Val Gly Thr Gly Val Ala Leu Val Thr
 565 570 575
 Gly Ala Thr Val Leu Gly Thr Ile Thr Cys Cys Phe Met Lys Arg Leu
 580 585 590
 Arg Lys Arg
 595

<211> 613
 <212> PRT
 <213> homo sapiens

<400> 63

Met Gly Ala Leu Arg Pro Thr Leu Leu Pro Pro Ser Leu Pro Leu Leu
 1 5 10 15
 Leu Leu Leu Met Leu Gly Met Gly Cys Trp Ala Arg Glu Val Leu Val
 20 25 30
 Pro Glu Gly Pro Leu Tyr Arg Val Ala Gly Thr Ala Val Ser Ile Ser
 35 40 45
 Cys Asn Val Thr Gly Tyr Glu Gly Pro Ala Gln Gln Asn Phe Glu Trp
 50 55 60
 Phe Leu Tyr Arg Pro Glu Ala Pro Asp Thr Ala Leu Gly Ile Val Ser
 65 70 75 80
 Thr Lys Asp Thr Gln Phe Ser Tyr Ala Val Phe Lys Ser Arg Val Val
 85 90 95
 Ala Gly Glu Val Gln Val Gln Arg Leu Gln Gly Asp Ala Val Val Leu
 100 105 110
 Lys Ile Ala Arg Leu Gln Ala Gln Asp Ala Gly Ile Tyr Glu Cys His
 115 120 125
 Thr Pro Ser Thr Asp Thr Arg Tyr Leu Gly Ser Tyr Ser Gly Lys Val
 130 135 140
 Glu Leu Arg Val Leu Pro Asp Val Leu Gln Val Ser Ala Ala Pro Pro
 145 150 155 160
 Gly Pro Arg Gly Arg Gln Ala Pro Thr Ser Pro Pro Arg Met Thr Val
 165 170 175
 His Glu Gly Gln Glu Leu Ala Leu Gly Cys Leu Ala Arg Thr Ser Thr
 180 185 190
 Gln Lys His Thr His Leu Ala Val Ser Phe Gly Arg Ser Val Pro Glu
 195 200 205
 Ala Pro Val Gly Arg Ser Thr Leu Gln Glu Val Val Gly Ile Arg Ser
 210 215 220
 Asp Leu Ala Val Glu Ala Gly Ala Pro Tyr Ala Glu Arg Leu Ala Ala
 225 230 235 240
 Gly Glu Leu Arg Leu Gly Lys Glu Gly Thr Asp Arg Tyr Arg Met Val
 245 250 255
 Val Gly Gly Ala Gln Ala Gly Asp Ala Gly Thr Tyr His Cys Thr Ala
 260 265 270
 Ala Glu Trp Ile Gln Asp Pro Asp Gly Ser Trp Ala Gln Ile Ala Glu
 275 280 285
 Lys Arg Ala Val Leu Ala His Val Asp Val Gln Thr Leu Ser Ser Gln
 290 295 300
 Leu Ala Val Thr Val Gly Pro Gly Glu Arg Arg Ile Gly Pro Gly Glu
 305 310 315 320
 Pro Leu Glu Leu Leu Cys Asn Val Ser Gly Ala Leu Pro Pro Ala Gly
 325 330 335
 Arg His Ala Ala Tyr Ser Val Gly Trp Glu Met Ala Pro Ala Gly Ala
 340 345 350
 Pro Gly Pro Gly Arg Leu Val Ala Gln Leu Asp Thr Glu Gly Val Gly
 355 360 365
 Ser Leu Gly Pro Gly Tyr Glu Gly Arg His Ile Ala Met Glu Lys Val
 370 375 380
 Ala Ser Arg Thr Tyr Arg Leu Arg Leu Glu Ala Ala Arg Pro Gly Asp
 385 390 395 400
 Ala Gly Thr Tyr Arg Cys Leu Ala Lys Ala Tyr Val Arg Gly Ser Gly
 405 410 415
 Thr Arg Leu Arg Glu Ala Ala Ser Ala Arg Ser Arg Pro Leu Pro Val
 420 425 430

His Val Arg Glu Glu Gly Val Val Leu Glu Ala Val Ala Trp Leu Ala
 435 440 445
 Gly Gly Thr Val Tyr Arg Gly Glu Thr Ala Ser Leu Leu Cys Asn Ile
 450 455 460
 Ser Val Arg Gly Gly Pro Pro Gly Leu Arg Leu Ala Ala Ser Trp Trp
 465 470 475 480
 Val Glu Arg Pro Glu Asp Gly Glu Leu Ser Ser Val Pro Ala Gln Leu
 485 490 495
 Val Gly Gly Val Gly Gln Asp Gly Val Ala Glu Leu Gly Val Arg Pro
 500 505 510
 Gly Gly Gly Pro Val Ser Val Glu Leu Val Gly Pro Arg Ser His Arg
 515 520 525
 Leu Arg Leu His Ser Leu Gly Pro Glu Asp Glu Gly Val Tyr His Cys
 530 535 540
 Ala Pro Ser Ala Trp Val Gln His Ala Asp Tyr Ser Trp Tyr Gln Ala
 545 550 555 560
 Gly Ser Ala Arg Ser Gly Pro Val Thr Val Tyr Pro Tyr Met His Ala
 565 570 575
 Leu Asp Thr Leu Phe Val Pro Leu Leu Val Gly Thr Gly Val Ala Leu
 580 585 590
 Val Thr Gly Ala Thr Val Leu Gly Thr Ile Thr Cys Cys Phe Met Lys
 595 600 605
 Arg Leu Arg Lys Arg
 610

<210> 64

<211> 596

<212> PRT

<213> homo sapiens

<400> 64

Met Ala Ala Asn Ser Thr Ser Asp Leu His Thr Pro Gly Thr Gln Leu
 1 5 10 15
 Ser Val Ala Asp Ile Ile Val Ile Thr Val Tyr Phe Ala Leu Asn Val
 20 25 30
 Ala Val Gly Ile Trp Ser Ser Cys Arg Ala Ser Arg Asn Thr Val Asn
 35 40 45
 Gly Tyr Phe Leu Ala Gly Arg Asp Met Thr Trp Trp Pro Ile Gly Ala
 50 55 60
 Ser Leu Phe Ala Ser Ser Glu Gly Ser Gly Leu Phe Ile Gly Leu Ala
 65 70 75 80
 Gly Ser Gly Ala Ala Gly Gly Leu Ala Val Ala Gly Phe Glu Trp Asn
 85 90 95
 Ala Thr Tyr Val Leu Leu Ala Leu Ala Trp Val Phe Val Pro Ile Tyr
 100 105 110
 Ile Ser Ser Glu Ile Val Thr Leu Pro Glu Tyr Ile Gln Lys Arg Tyr
 115 120 125
 Gly Gly Gln Arg Ile Arg Met Tyr Leu Ser Val Leu Ser Leu Leu Leu
 130 135 140
 Ser Val Phe Thr Lys Ile Ser Leu Asp Leu Tyr Ala Gly Ala Leu Phe
 145 150 155 160
 Val His Ile Cys Leu Gly Trp Asn Phe Tyr Leu Ser Thr Ile Leu Thr
 165 170 175
 Leu Gly Ile Thr Ala Leu Tyr Thr Ile Ala Gly Gly Leu Ala Ala Val
 180 185 190
 Ile Tyr Thr Asp Ala Leu Gln Thr Leu Ile Met Val Val Gly Ala Val
 195 200 205
 Ile Leu Thr Ile Lys Ala Phe Asp Gln Ile Gly Gly Tyr Gly Gln Leu

210 215 220
 Glu Ala Ala Tyr Ala Gln Ala Ile Pro Ser Arg Thr Ile Ala Asn Thr
 225 230 235 240
 Thr Cys His Leu Pro Arg Thr Asp Ala Met His Met Phe Arg Asp Pro
 245 250 255
 His Thr Gly Asp Leu Pro Trp Thr Gly Met Thr Phe Gly Leu Thr Ile
 260 265 270
 Met Ala Thr Trp Tyr Trp Cys Thr Asp Gln Val Ile Val Gln Arg Ser
 275 280 285
 Leu Ser Ala Arg Asp Leu Asn His Ala Lys Ala Gly Ser Ile Leu Ala
 290 295 300
 Ser Tyr Leu Lys Met Leu Pro Met Gly Leu Ile Ile Met Pro Gly Met
 305 310 315 320
 Ile Ser Arg Ala Leu Phe Pro Asp Asp Val Gly Cys Val Val Pro Ser
 325 330 335
 Glu Cys Leu Arg Ala Cys Gly Ala Glu Val Gly Cys Ser Asn Ile Ala
 340 345 350
 Tyr Pro Lys Leu Val Met Glu Leu Met Pro Ile Gly Leu Arg Gly Leu
 355 360 365
 Met Ile Ala Val Met Leu Ala Ala Leu Met Ser Ser Leu Thr Ser Ile
 370 375 380
 Phe Asn Ser Ser Ser Thr Leu Phe Thr Met Asp Ile Trp Arg Arg Leu
 385 390 395 400
 Arg Pro Arg Ser Gly Glu Arg Glu Leu Leu Val Gly Arg Leu Val
 405 410 415
 Ile Val Ala Leu Ile Gly Val Ser Val Ala Trp Ile Pro Val Leu Gln
 420 425 430
 Asp Ser Asn Ser Gly Gln Leu Phe Ile Tyr Met Gln Ser Val Thr Ser
 435 440 445
 Ser Leu Ala Pro Pro Val Thr Ala Val Phe Val Leu Gly Val Phe Trp
 450 455 460
 Arg Arg Ala Asn Glu Gln Gly Ala Phe Trp Gly Leu Ile Ala Gly Leu
 465 470 475 480
 Val Val Gly Ala Thr Arg Leu Val Leu Glu Phe Leu Asn Pro Ala Pro
 485 490 495
 Pro Cys Gly Glu Pro Asp Thr Arg Pro Ala Val Leu Gly Ser Ile His
 500 505 510
 Tyr Leu His Phe Ala Val Ala Leu Phe Ala Leu Ser Gly Ala Val Val
 515 520 525
 Val Ala Gly Ser Leu Leu Thr Pro Pro Pro Gln Ser Val Gln Ile Glu
 530 535 540
 Asn Leu Thr Trp Trp Thr Leu Ala Gln Asp Val Pro Leu Gly Thr Lys
 545 550 555 560
 Ala Gly Asp Gly Gln Thr Pro Gln Lys His Ala Phe Trp Ala Arg Val
 565 570 575
 Cys Gly Phe Asn Ala Ile Leu Leu Met Cys Val Asn Ile Phe Phe Tyr
 580 585 590
 Ala Tyr Phe Ala
 595

<210> 65
 <211> 393
 <212> PRT
 <213> homo sapiens

<400> 65
 Met Asp Ser Leu Lys Asn Glu Asn Tyr Asp Leu Val Phe Val Glu Ala
 1 5 10 15

Phe Asp Phe Cys Ser Phe Leu Ile Ala Glu Lys Leu Val Lys Pro Phe
 20 25 30
 Val Ala Ile Leu Pro Thr Thr Phe Gly Ser Leu Asp Phe Gly Leu Pro
 35 40 45
 Ser Pro Leu Ser Tyr Val Pro Val Phe Pro Ser Leu Leu Thr Asp His
 50 55 60
 Met Asp Phe Trp Gly Arg Val Lys Asn Phe Leu Met Phe Phe Ser Phe
 65 70 75 80
 Ser Arg Ser Gln Trp Asp Met Gln Ser Thr Phe Asp Asn Thr Ile Lys
 85 90 95
 Glu His Phe Pro Glu Gly Ser Arg Pro Val Leu Ser His Leu Leu Leu
 100 105 110
 Lys Ala Glu Leu Trp Phe Val Asn Ser Asp Phe Ala Phe Asp Phe Ala
 115 120 125
 Arg Pro Leu Leu Pro Asn Thr Val Tyr Ile Gly Gly Leu Met Glu Lys
 130 135 140
 Pro Ile Lys Pro Val Pro Gln Asp Leu Asp Asn Phe Ile Ala Asn Phe
 145 150 155 160
 Gly Asp Ala Gly Phe Val Leu Val Ala Phe Gly Ser Met Leu Asn Thr
 165 170 175
 His Gln Ser Gln Glu Val Leu Lys Lys Met His Asn Ala Phe Ala His
 180 185 190
 Leu Pro Gln Gly Val Ile Trp Thr Cys Gln Ser Ser His Trp Pro Arg
 195 200 205
 Asp Val His Leu Ala Thr Asn Val Lys Ile Val Asp Trp Leu Pro Gln
 210 215 220
 Ser Asp Leu Leu Ala His Pro Ser Ile Arg Leu Phe Val Thr His Gly
 225 230 235 240
 Gly Gln Asn Ser Val Met Glu Ala Ile Arg His Gly Val Pro Met Val
 245 250 255
 Gly Leu Pro Val Asn Gly Asp Gln His Gly Asn Met Val Arg Val Val
 260 265 270
 Ala Lys Asn Tyr Gly Val Ser Ile Arg Leu Asn Gln Val Thr Ala Asp
 275 280 285
 Thr Leu Thr Leu Thr Met Lys Gln Val Ile Glu Asp Lys Arg Tyr Lys
 290 295 300
 Ser Ala Val Val Ala Ala Ser Val Ile Leu His Ser Gln Pro Leu Ser
 305 310 315 320
 Pro Ala Gln Arg Leu Val Gly Trp Ile Asp His Ile Leu Gln Thr Gly
 325 330 335
 Gly Ala Thr His Leu Lys Pro Tyr Ala Phe Gln Gln Pro Trp His Glu
 340 345 350
 Gln Tyr Leu Ile Asp Val Phe Val Phe Leu Leu Gly Leu Thr Leu Gly
 355 360 365
 Thr Met Trp Leu Cys Gly Lys Leu Leu Gly Val Val Ala Arg Trp Leu
 370 375 380
 Arg Gly Ala Arg Lys Val Lys Lys Thr
 385 390

<210> 66

<211> 523

<212> PRT

<213> homo sapiens

<400> 66

Met Val Gly Gln Arg Val Leu Leu Leu Val Ala Phe Leu Leu Ser Gly
 1 5 10 15
 Val Leu Leu Ser Glu Ala Ala Lys Ile Leu Thr Ile Ser Thr Leu Gly

20 25 30
 Gly Ser His Tyr Leu Leu Leu Asp Arg Val Ser Gln Ile Leu Gln Glu
 35 40 45
 His Gly His Asn Val Thr Met Leu His Gln Ser Gly Lys Phe Leu Ile
 50 55 60
 Pro Asp Ile Lys Glu Glu Glu Lys Ser Tyr Gln Val Ile Arg Trp Phe
 65 70 75 80
 Ser Pro Glu Asp His Gln Lys Arg Ile Lys Lys His Phe Asp Ser Tyr
 85 90 95
 Ile Glu Thr Ala Leu Asp Gly Arg Lys Glu Ser Glu Ala Leu Val Lys
 100 105 110
 Leu Met Glu Ile Phe Gly Thr Gln Cys Ser Tyr Leu Leu Ser Arg Lys
 115 120 125
 Asp Ile Met Asp Ser Leu Lys Asn Glu Asn Tyr Asp Leu Val Phe Val
 130 135 140
 Glu Ala Phe Asp Phe Cys Ser Phe Leu Ile Ala Glu Lys Leu Val Lys
 145 150 155 160
 Pro Phe Val Ala Ile Leu Pro Thr Thr Phe Gly Ser Leu Asp Phe Gly
 165 170 175
 Leu Pro Ser Pro Leu Ser Tyr Val Pro Val Phe Pro Ser Leu Leu Thr
 180 185 190
 Asp His Met Asp Phe Trp Gly Arg Val Lys Asn Phe Leu Met Phe Phe
 195 200 205
 Ser Phe Ser Arg Ser Gln Trp Asp Met Gln Ser Thr Phe Asp Asn Thr
 210 215 220
 Ile Lys Glu His Phe Pro Glu Gly Ser Arg Pro Val Leu Ser His Leu
 225 230 235 240
 Leu Leu Lys Ala Glu Leu Trp Phe Val Asn Ser Asp Phe Ala Phe Asp
 245 250 255
 Phe Ala Arg Pro Leu Leu Pro Asn Thr Val Tyr Ile Gly Gly Leu Met
 260 265 270
 Glu Lys Pro Ile Lys Pro Val Pro Gln Asp Leu Asp Asn Phe Ile Ala
 275 280 285
 Asn Phe Gly Asp Ala Gly Phe Val Leu Val Ala Phe Gly Ser Met Leu
 290 295 300
 Asn Thr His Gln Ser Gln Glu Val Leu Lys Lys Met His Asn Ala Phe
 305 310 315 320
 Ala His Leu Pro Gln Gly Val Ile Trp Thr Cys Gln Ser Ser His Trp
 325 330 335
 Pro Arg Asp Val His Leu Ala Thr Asn Val Lys Ile Val Asp Trp Leu
 340 345 350
 Pro Gln Ser Asp Leu Leu Ala His Pro Ser Ile Arg Leu Phe Val Thr
 355 360 365
 His Gly Gly Gln Asn Ser Val Met Glu Ala Ile Arg His Gly Val Pro
 370 375 380
 Met Val Gly Leu Pro Val Asn Gly Asp Gln His Gly Asn Met Val Arg
 385 390 395 400
 Val Val Ala Lys Asn Tyr Gly Val Ser Ile Arg Leu Asn Gln Val Thr
 405 410 415
 Ala Asp Thr Leu Thr Leu Thr Met Lys Gln Val Ile Glu Asp Lys Arg
 420 425 430
 Tyr Lys Ser Ala Val Val Ala Ala Ser Val Ile Leu His Ser Gln Pro
 435 440 445
 Leu Ser Pro Ala Gln Arg Leu Val Gly Trp Ile Asp His Ile Leu Gln
 450 455 460
 Thr Gly Gly Ala Thr His Leu Lys Pro Tyr Ala Phe Gln Gln Pro Trp
 465 470 475 480
 His Glu Gln Tyr Leu Ile Asp Val Phe Val Phe Leu Leu Gly Leu Thr
 485 490 495

Leu Gly Thr Met Trp Leu Cys Gly Lys Leu Leu Gly Val Val Ala Arg
 500 505 510
 Trp Leu Arg Gly Ala Arg Lys Val Lys Lys Thr
 515 520

<210> 67
 <211> 252
 <212> PRT
 <213> homo sapiens

<400> 67
 Met Ser Cys Val Leu Gly Gly Val Ile Pro Leu Gly Leu Leu Phe Leu
 1 5 10 15
 Val Cys Gly Ser Gln Gly Tyr Leu Leu Pro Asn Val Thr Leu Leu Glu
 20 25 30
 Glu Leu Leu Ser Lys Tyr Gln His Asn Glu Ser His Ser Arg Val Arg
 35 40 45
 Arg Ala Ile Pro Arg Glu Asp Lys Glu Glu Ile Leu Met Leu His Asn
 50 55 60
 Lys Leu Arg Gly Gln Val Gln Pro Gln Ala Ser Asn Met Glu Tyr Met
 65 70 75 80
 Thr Trp Asp Asp Glu Leu Glu Lys Ser Ala Ala Ala Trp Ala Ser Gln
 85 90 95
 Cys Ile Trp Glu His Gly Pro Thr Ser Leu Leu Val Ser Ile Gly Gln
 100 105 110
 Asn Leu Gly Ala His Trp Gly Arg Tyr Arg Ser Pro Gly Phe His Val
 115 120 125
 Gln Ser Trp Tyr Asp Glu Val Lys Asp Tyr Thr Tyr Pro Tyr Pro Ser
 130 135 140
 Glu Cys Asn Pro Trp Cys Pro Glu Arg Cys Ser Gly Pro Met Cys Thr
 145 150 155 160
 His Tyr Thr Gln Ile Val Trp Ala Thr Thr Asn Lys Ile Gly Cys Ala
 165 170 175
 Val Asn Thr Cys Arg Lys Met Thr Val Trp Gly Glu Val Trp Glu Asn
 180 185 190
 Ala Val Tyr Phe Val Cys Asn Tyr Ser Pro Lys Gly Asn Trp Ile Gly
 195 200 205
 Glu Ala Pro Tyr Lys Asn Gly Arg Pro Cys Ser Glu Cys Pro Pro Ser
 210 215 220
 Tyr Gly Gly Ser Cys Arg Asn Asn Leu Cys Tyr Arg Gly Arg Lys Phe
 225 230 235 240
 Thr Pro Asn Thr Phe Ala Met Asn Leu Pro Ser Val
 245 250

<210> 68
 <211> 497
 <212> PRT
 <213> homo sapiens

<400> 68
 Met Ser Cys Val Leu Gly Gly Val Ile Pro Leu Gly Leu Leu Phe Leu
 1 5 10 15
 Val Cys Gly Ser Gln Gly Tyr Leu Leu Pro Asn Val Thr Leu Leu Glu
 20 25 30
 Glu Leu Leu Ser Lys Tyr Gln His Asn Glu Ser His Ser Arg Val Arg
 35 40 45
 Arg Ala Ile Pro Arg Glu Asp Lys Glu Glu Ile Leu Met Leu His Asn

50 55 60
 Lys Leu Arg Gly Gln Val Gln Pro Gln Ala Ser Asn Met Glu Tyr Met
 65 70 75 80
 Thr Trp Asp Asp Glu Leu Glu Lys Ser Ala Ala Ala Trp Ala Ser Gln
 85 90 95
 Cys Ile Trp Glu His Gly Pro Thr Ser Leu Leu Val Ser Ile Gly Gln
 100 105 110
 Asn Leu Gly Ala His Trp Gly Arg Tyr Arg Ser Pro Gly Phe His Val
 115 120 125
 Gln Ser Trp Tyr Asp Glu Val Lys Asp Tyr Thr Tyr Pro Tyr Pro Ser
 130 135 140
 Glu Cys Asn Pro Trp Cys Pro Glu Arg Cys Ser Gly Pro Met Cys Thr
 145 150 155 160
 His Tyr Thr Gln Ile Val Trp Ala Thr Thr Asn Lys Ile Gly Cys Ala
 165 170 175
 Val Asn Thr Cys Arg Lys Met Thr Val Trp Gly Glu Val Trp Glu Asn
 180 185 190
 Ala Val Tyr Phe Val Cys Asn Tyr Ser Pro Lys Gly Asn Trp Ile Gly
 195 200 205
 Glu Ala Pro Tyr Lys Asn Gly Arg Pro Cys Ser Glu Cys Pro Pro Ser
 210 215 220
 Tyr Gly Gly Ser Cys Arg Asn Asn Leu Cys Tyr Arg Glu Glu Thr Tyr
 225 230 235 240
 Thr Pro Lys Pro Glu Thr Asp Glu Met Asn Glu Val Glu Thr Ala Pro
 245 250 255
 Ile Pro Glu Glu Asn His Val Trp Leu Gln Pro Arg Val Met Arg Pro
 260 265 270
 Thr Lys Pro Lys Lys Thr Ser Ala Val Asn Tyr Met Thr Gln Val Val
 275 280 285
 Arg Cys Asp Thr Lys Met Lys Asp Arg Cys Lys Gly Ser Thr Cys Asn
 290 295 300
 Arg Tyr Gln Cys Pro Ala Gly Cys Leu Asn His Lys Ala Lys Ile Phe
 305 310 315 320
 Gly Thr Leu Phe Tyr Glu Ser Ser Ser Ser Ile Cys Arg Ala Ala Ile
 325 330 335
 His Tyr Gly Ile Leu Asp Asp Lys Gly Gly Leu Val Asp Ile Thr Arg
 340 345 350
 Asn Gly Lys Val Pro Phe Phe Val Lys Ser Glu Arg His Gly Val Gln
 355 360 365
 Ser Leu Ser Lys Tyr Lys Pro Ser Ser Ser Phe Met Val Ser Lys Val
 370 375 380
 Lys Val Gln Asp Leu Asp Cys Tyr Thr Thr Val Ala Gln Leu Cys Pro
 385 390 395 400
 Phe Glu Lys Pro Ala Thr His Cys Pro Arg Ile His Cys Pro Ala His
 405 410 415
 Cys Lys Asp Glu Pro Ser Tyr Trp Ala Pro Val Phe Gly Thr Asn Ile
 420 425 430
 Tyr Ala Asp Thr Ser Ser Ile Cys Lys Thr Ala Val His Ala Gly Val
 435 440 445
 Ile Ser Asn Glu Ser Gly Gly Asp Val Asp Val Met Pro Val Asp Lys
 450 455 460
 Lys Lys Thr Tyr Val Gly Ser Leu Arg Asn Gly Val Gln Ser Glu Ser
 465 470 475 480
 Leu Gly Thr Pro Arg Asp Gly Lys Ala Phe Arg Ile Phe Ala Val Arg
 485 490 495
 Gln

<210> 69
 <211> 438
 <212> PRT
 <213> homo sapiens

<400> 69

Asx	Met	Leu	His	Asn	Lys	Leu	Arg	Gly	Gln	Val	Gln	Pro	Gln	Ala	Ser
1				5					10					15	
Asn	Met	Glu	Tyr	Met	Thr	Trp	Asp	Asp	Glu	Leu	Glu	Lys	Ser	Ala	Ala
		20						25					30		
Ala	Trp	Ala	Ser	Gln	Cys	Ile	Trp	Glu	His	Gly	Pro	Thr	Ser	Leu	Leu
		35					40					45			
Val	Ser	Ile	Gly	Gln	Asn	Leu	Gly	Ala	His	Trp	Gly	Arg	Tyr	Arg	Ser
	50					55					60				
Pro	Gly	Phe	His	Val	Gln	Ser	Trp	Tyr	Asp	Glu	Val	Lys	Asp	Tyr	Thr
65					70					75					80
Tyr	Pro	Tyr	Pro	Ser	Glu	Cys	Asn	Pro	Trp	Cys	Pro	Glu	Arg	Cys	Ser
				85					90					95	
Gly	Pro	Met	Cys	Thr	His	Tyr	Thr	Gln	Ile	Val	Trp	Ala	Thr	Thr	Asn
			100					105					110		
Lys	Ile	Gly	Cys	Ala	Val	Asn	Thr	Cys	Arg	Lys	Met	Thr	Val	Trp	Gly
		115					120					125			
Glu	Val	Trp	Glu	Asn	Ala	Val	Tyr	Phe	Val	Cys	Asn	Tyr	Ser	Pro	Lys
	130					135					140				
Gly	Asn	Trp	Ile	Gly	Glu	Ala	Pro	Tyr	Lys	Asn	Gly	Arg	Pro	Cys	Ser
145					150					155					160
Glu	Cys	Pro	Pro	Ser	Tyr	Gly	Gly	Ser	Cys	Arg	Asn	Asn	Leu	Cys	Tyr
				165						170				175	
Arg	Glu	Glu	Thr	Tyr	Thr	Pro	Lys	Pro	Glu	Thr	Asp	Glu	Met	Asn	Glu
			180					185					190		
Val	Glu	Thr	Ala	Pro	Ile	Pro	Glu	Glu	Asn	His	Val	Trp	Leu	Gln	Pro
	195						200					205			
Arg	Val	Met	Arg	Pro	Thr	Lys	Pro	Lys	Lys	Thr	Ser	Ala	Val	Asn	Tyr
	210					215					220				
Met	Thr	Gln	Val	Val	Arg	Cys	Asp	Thr	Lys	Met	Lys	Asp	Arg	Cys	Lys
225					230					235					240
Gly	Ser	Thr	Cys	Asn	Arg	Tyr	Gln	Cys	Pro	Ala	Gly	Cys	Leu	Asn	His
				245					250					255	
Lys	Ala	Lys	Ile	Phe	Gly	Thr	Leu	Phe	Tyr	Glu	Ser	Ser	Ser	Ser	Ile
			260					265					270		
Cys	Arg	Ala	Ala	Ile	His	Tyr	Gly	Ile	Leu	Asp	Asp	Lys	Gly	Gly	Leu
		275					280					285			
Val	Asp	Ile	Thr	Arg	Asn	Gly	Lys	Val	Pro	Phe	Phe	Val	Lys	Ser	Glu
	290					295					300				
Arg	His	Gly	Val	Gln	Ser	Leu	Ser	Lys	Tyr	Lys	Pro	Ser	Ser	Ser	Phe
305					310					315					320
Met	Val	Ser	Lys	Val	Lys	Val	Gln	Asp	Leu	Asp	Cys	Tyr	Thr	Thr	Val
				325					330					335	
Ala	Gln	Leu	Cys	Pro	Phe	Glu	Lys	Pro	Ala	Thr	His	Cys	Pro	Arg	Ile
			340					345					350		
His	Cys	Pro	Ala	His	Cys	Lys	Asp	Glu	Pro	Ser	Tyr	Trp	Ala	Pro	Val
		355					360					365			
Phe	Gly	Thr	Asn	Ile	Tyr	Ala	Asp	Thr	Ser	Ser	Ile	Cys	Lys	Thr	Ala
	370					375					380				
Val	His	Ala	Gly	Val	Ile	Ser	Asn	Glu	Ser	Gly	Gly	Asp	Val	Asp	Val
385					390					395					400
Met	Pro	Val	Asp	Lys	Lys	Lys	Thr	Tyr	Val	Gly	Ser	Leu	Arg	Asn	Gly
				405					410					415	
Val	Gln	Ser	Glu	Ser	Leu	Gly	Thr	Pro	Arg	Asp	Gly	Lys	Ala	Phe	Arg

Ile Phe Ala Val Arg Gln
435

425

430

<210> 70
<211> 308
<212> PRT
<213> homo sapiens

<400> 70
Met Val Gly Gly Val Leu Ala Ser Leu Gly Phe Val Phe Ser Ala Phe
1 5 10 15
Ala Ser Asp Leu Leu His Leu Tyr Leu Gly Leu Gly Leu Leu Ala Gly
20 25 30
Phe Gly Trp Ala Leu Val Phe Ala Pro Ala Leu Gly Thr Leu Ser Arg
35 40 45
Tyr Phe Ser Arg Arg Arg Val Leu Ala Val Gly Leu Ala Leu Thr Gly
50 55 60
Asn Gly Ala Ser Ser Leu Leu Leu Ala Pro Ala Leu Gln Leu Leu Leu
65 70 75 80
Asp Thr Phe Gly Trp Arg Gly Ala Leu Leu Leu Leu Gly Ala Ile Thr
85 90 95
Leu His Leu Thr Pro Cys Gly Ala Leu Leu Leu Pro Leu Val Leu Pro
100 105 110
Gly Asp Pro Pro Ala Pro Pro Arg Ser Pro Leu Ala Ala Leu Gly Leu
115 120 125
Ser Leu Phe Thr Arg Arg Ala Phe Ser Ile Phe Ala Leu Gly Thr Ala
130 135 140
Leu Val Gly Gly Gly Tyr Phe Val Pro Tyr Val His Leu Ala Pro His
145 150 155 160
Ala Leu Asp Arg Gly Leu Gly Gly Tyr Gly Ala Ala Leu Val Val Ala
165 170 175
Val Ala Ala Met Gly Asp Ala Gly Ala Arg Leu Val Cys Gly Trp Leu
180 185 190
Ala Asp Gln Gly Trp Val Pro Leu Pro Arg Leu Leu Ala Val Phe Gly
195 200 205
Ala Leu Thr Gly Leu Gly Leu Trp Val Val Gly Leu Val Pro Val Val
210 215 220
Gly Gly Glu Glu Ser Trp Gly Gly Pro Leu Leu Ala Ala Val Ala
225 230 235 240
Tyr Gly Leu Ser Ala Gly Ser Tyr Ala Pro Leu Val Phe Gly Val Leu
245 250 255
Pro Gly Leu Val Gly Val Gly Gly Val Val Gln Ala Thr Gly Leu Val
260 265 270
Met Met Leu Met Ser Leu Gly Gly Leu Leu Gly Pro Pro Leu Ser Gly
275 280 285
Lys Asp Leu Ser Ser Gln Ile Cys Leu Gln Leu Ser Ser Ala Pro Gly
290 295 300
Val Arg Gly Phe
305

<210> 71
<211> 447
<212> PRT
<213> homo sapiens

<400> 71

```

Met Thr Pro Gln Pro Ala Gly Pro Pro Asp Gly Gly Trp Gly Trp Val
 1      5      10      15
Val Ala Ala Ala Phe Ala Ile Asn Gly Leu Ser Tyr Gly Leu Leu
 20      25      30
Arg Ser Leu Gly Leu Ala Phe Pro Asp Leu Ala Glu His Phe Asp Arg
 35      40      45
Ser Ala Gln Asp Thr Ala Trp Ile Ser Ala Leu Ala Leu Ala Val Gln
 50      55      60
Gln Ala Ala Ser Pro Val Gly Ser Ala Leu Ser Thr Arg Trp Gly Ala
 65      70      75      80
Arg Pro Val Val Met Val Gly Gly Val Leu Ala Ser Leu Gly Phe Val
 85      90      95
Phe Ser Ala Phe Ala Ser Asp Leu Leu His Leu Tyr Leu Gly Leu Gly
 100     105     110
Leu Leu Ala Gly Phe Gly Trp Ala Leu Val Phe Ala Pro Ala Leu Gly
 115     120     125
Thr Leu Ser Arg Tyr Phe Ser Arg Arg Arg Val Leu Ala Val Gly Leu
 130     135     140
Ala Leu Thr Gly Asn Gly Ala Ser Ser Leu Leu Ala Pro Ala Leu
 145     150     155     160
Gln Leu Leu Leu Asp Thr Phe Gly Trp Arg Gly Ala Leu Leu Leu Leu
 165     170     175
Gly Ala Ile Thr Leu His Leu Thr Pro Cys Gly Ala Leu Leu Leu Pro
 180     185     190
Leu Val Leu Pro Gly Asp Pro Pro Ala Pro Pro Arg Ser Pro Leu Ala
 195     200     205
Ala Leu Gly Leu Ser Leu Phe Thr Arg Arg Ala Phe Ser Ile Phe Ala
 210     215     220
Leu Gly Thr Ala Leu Val Gly Gly Gly Tyr Phe Val Pro Tyr Val His
 225     230     235     240
Leu Ala Pro His Ala Leu Asp Arg Gly Leu Gly Gly Tyr Gly Ala Ala
 245     250     255
Leu Val Val Ala Val Ala Ala Met Gly Asp Ala Gly Ala Arg Leu Val
 260     265     270
Cys Gly Trp Leu Ala Asp Gln Gly Trp Val Pro Leu Pro Arg Leu Leu
 275     280     285
Ala Val Phe Gly Ala Leu Thr Gly Leu Gly Leu Trp Val Val Gly Leu
 290     295     300
Val Pro Val Val Gly Gly Glu Glu Ser Trp Gly Gly Pro Leu Leu Ala
 305     310     315     320
Ala Ala Val Ala Tyr Gly Leu Ser Ala Gly Ser Tyr Ala Pro Leu Val
 325     330     335
Phe Gly Val Leu Pro Gly Leu Val Gly Val Gly Gly Val Val Gln Ala
 340     345     350
Thr Gly Leu Val Met Met Leu Met Ser Leu Gly Gly Leu Leu Gly Pro
 355     360     365
Pro Leu Ser Gly Phe Leu Arg Asp Glu Thr Gly Asp Phe Thr Ala Ser
 370     375     380
Phe Leu Leu Ser Gly Ser Leu Ile Leu Ser Gly Ser Phe Ile Tyr Ile
 385     390     395     400
Gly Leu Pro Arg Ala Leu Pro Ser Cys Gly Pro Ala Ser Pro Pro Ala
 405     410     415
Thr Pro Pro Pro Glu Thr Gly Glu Leu Leu Pro Ala Pro Gln Ala Val
 420     425     430
Leu Leu Ser Pro Gly Gly Pro Gly Ser Thr Leu Asp Thr Thr Cys
 435     440     445

```

<211> 458

<212> PRT

<213> homo sapiens

<400> 72

Asx Met Ala Arg Arg Thr Glu Pro Pro Asp Gly Gly Trp Gly Trp Val
 1 5 10 15
 Val Val Leu Ser Ala Phe Phe Gln Ser Ala Leu Val Phe Gly Val Leu
 20 25 30
 Arg Ser Phe Gly Val Phe Phe Val Glu Phe Val Ala Ala Phe Glu Glu
 35 40 45
 Gln Ala Ala Arg Val Ser Trp Ile Ala Ser Ile Gly Ile Ala Val Gln
 50 55 60
 Gln Phe Gly Ser Pro Val Gly Ser Ala Leu Ser Thr Lys Phe Gly Pro
 65 70 75 80
 Arg Pro Val Val Met Thr Gly Gly Ile Leu Ala Ala Leu Gly Met Leu
 85 90 95
 Leu Ala Ser Phe Ala Thr Ser Leu Thr His Leu Tyr Leu Ser Ile Gly
 100 105 110
 Leu Leu Ser Gly Ser Gly Trp Ala Leu Thr Phe Ala Pro Thr Leu Ala
 115 120 125
 Cys Leu Ser Cys Tyr Phe Ser Arg Arg Arg Ser Leu Ala Thr Gly Leu
 130 135 140
 Ala Leu Thr Gly Val Gly Leu Ser Ser Phe Thr Phe Ala Pro Phe Phe
 145 150 155 160
 Gln Trp Leu Leu Ser His Tyr Ala Trp Arg Gly Ser Leu Leu Leu Val
 165 170 175
 Ser Ala Leu Ser Leu His Leu Val Ala Cys Gly Ala Leu Leu Arg Pro
 180 185 190
 Pro Ser Leu Ala Glu Asp Pro Ala Val Gly Gly Pro Arg Ala Gln Leu
 195 200 205
 Thr Ser Leu Leu His His Gly Pro Phe Leu Arg Tyr Thr Val Ala Leu
 210 215 220
 Thr Leu Ile Asn Thr Gly Tyr Phe Ile Pro Tyr Leu His Leu Val Ala
 225 230 235 240
 His Leu Gln Asp Leu Asp Trp Asp Pro Leu Pro Ala Ala Phe Leu Leu
 245 250 255
 Ser Val Val Ala Ile Ser Asp Leu Val Gly Arg Val Val Ser Gly Trp
 260 265 270
 Leu Gly Asp Ala Val Pro Gly Pro Val Thr Arg Leu Leu Met Leu Trp
 275 280 285
 Thr Thr Leu Thr Gly Val Ser Leu Ala Leu Phe Pro Val Ala Gln Ala
 290 295 300
 Pro Thr Ala Leu Val Ala Leu Ala Val Ala Tyr Gly Phe Thr Ser Gly
 305 310 315 320
 Ala Leu Ala Pro Leu Ala Phe Ser Val Leu Pro Glu Leu Ile Gly Thr
 325 330 335
 Arg Arg Ile Tyr Cys Gly Leu Gly Leu Leu Gln Met Ile Glu Ser Ile
 340 345 350
 Gly Gly Leu Leu Gly Pro Pro Leu Ser Gly Tyr Leu Arg Asp Val Ser
 355 360 365
 Gly Asn Tyr Thr Ala Ser Phe Val Val Ala Gly Ala Phe Leu Leu Ser
 370 375 380
 Gly Ser Gly Ile Leu Leu Thr Leu Pro His Phe Phe Cys Phe Ser Thr
 385 390 395 400
 Thr Thr Ser Gly Pro Gln Asp Leu Val Thr Glu Ala Leu Asp Thr Lys
 405 410 415
 Val Pro Leu Pro Lys Glu Gly Leu Glu Gly Gly Leu Asn Ser Thr Glu
 420 425 430

Ser Gly Pro Glu Ser Gln Ser Leu Thr Ala Pro Gly Leu Leu Leu Pro
 435 440 445
 Arg Leu Gly Leu His Arg Thr Thr Val Pro
 450 455

<210> 73
 <211> 169
 <212> PRT
 <213> homo sapiens

<400> 73
 Met Thr Met Lys Thr Ser Gly Ala Thr Cys Asp Ala Asn Ser Val Met
 1 5 10 15
 Asn Cys Gly Ile Arg Gly Ser Glu Met Phe Ala Glu Met Asp Leu Arg
 20 25 30
 Ala Ile Lys Pro Tyr Gln Thr Leu Ile Lys Lys Val Gly Gln Arg His
 35 40 45
 Cys Val Asp Pro Ala Val Ile Ala Ala Ile Ile Ser Arg Glu Ser His
 50 55 60
 Gly Gly Ser Val Leu Gln Asp Gly Trp Asp His Arg Gly Leu Lys Phe
 65 70 75 80
 Gly Leu Met Gln Leu Asp Lys Gln Thr Tyr His Pro Val Gly Ala Trp
 85 90 95
 Asp Ser Lys Glu His Leu Ser Gln Ala Thr Gly Ile Leu Thr Glu Arg
 100 105 110
 Ile Lys Ala Ile Gln Lys Lys Phe Pro Thr Trp Ser Val Ala Gln His
 115 120 125
 Leu Lys Gly Gly Leu Ser Ala Phe Lys Ser Gly Ile Glu Ala Ile Ala
 130 135 140
 Thr Pro Ser Asp Ile Asp Asn Asp Phe Val Asn Asp Ile Ile Ala Arg
 145 150 155 160
 Ala Lys Phe Tyr Lys Arg Gln Ser Phe
 165

<210> 74
 <211> 186
 <212> PRT
 <213> homo sapiens

<400> 74
 Met Lys Pro His Leu His Pro Arg Leu Tyr His Gly Cys Tyr Gly Asp
 1 5 10 15
 Ile Met Thr Met Lys Thr Ser Gly Ala Thr Cys Asp Ala Asn Ser Val
 20 25 30
 Met Asn Cys Gly Ile Arg Gly Ser Glu Met Phe Ala Glu Met Asp Leu
 35 40 45
 Arg Ala Ile Lys Pro Tyr Gln Thr Leu Ile Lys Lys Val Gly Gln Arg
 50 55 60
 His Cys Val Asp Pro Ala Val Ile Ala Ala Ile Ile Ser Arg Glu Ser
 65 70 75 80
 His Gly Gly Ser Val Leu Gln Asp Gly Trp Asp His Arg Gly Leu Lys
 85 90 95
 Phe Gly Leu Met Gln Leu Asp Lys Gln Thr Tyr His Pro Val Gly Ala
 100 105 110
 Trp Asp Ser Lys Glu His Leu Ser Gln Ala Thr Gly Ile Leu Thr Glu
 115 120 125
 Arg Ile Lys Ala Ile Gln Lys Lys Phe Pro Thr Trp Ser Val Ala Gln

130 135 140
 His Leu Lys Gly Gly Leu Ser Ala Phe Lys Ser Gly Ile Glu Ala Ile
 145 150 155 160
 Ala Thr Pro Ser Asp Ile Asp Asn Asp Phe Val Asn Asp Ile Ile Ala
 165 170 175
 Arg Ala Lys Phe Tyr Lys Arg Gln Ser Phe
 180 185

 <210> 75
 <211> 675
 <212> PRT
 <213> homo sapiens

 <400> 75
 Met Glu Ser Gly Thr Ser Ser Pro Gln Pro Pro Gln Leu Asp Pro Leu
 1 5 10 15
 Asp Ala Phe Pro Gln Lys Gly Leu Glu Pro Gly Asp Ile Ala Val Leu
 20 25 30
 Val Leu Tyr Phe Leu Phe Val Leu Ala Val Gly Leu Trp Ser Thr Val
 35 40 45
 Lys Thr Lys Arg Asp Thr Val Lys Gly Tyr Phe Leu Ala Gly Gly Asp
 50 55 60
 Met Val Trp Trp Pro Val Gly Ala Ser Leu Phe Ala Ser Asn Val Gly
 65 70 75 80
 Ser Gly His Phe Ile Gly Leu Ala Gly Ser Gly Ala Ala Thr Gly Ile
 85 90 95
 Ser Val Ser Ala Tyr Glu Leu Asn Gly Leu Phe Ser Val Leu Met Leu
 100 105 110
 Ala Trp Ile Phe Leu Pro Ile Tyr Ile Ala Gly Gln Val Thr Thr Met
 115 120 125
 Pro Glu Tyr Leu Arg Lys Arg Phe Gly Gly Ile Arg Ile Pro Ile Ile
 130 135 140
 Leu Ala Val Leu Tyr Leu Phe Ile Tyr Ile Phe Thr Lys Ile Ser Val
 145 150 155 160
 Asp Met Tyr Ala Gly Ala Ile Phe Ile Gln Gln Ser Leu His Leu Asp
 165 170 175
 Leu Tyr Leu Ala Ile Val Gly Leu Leu Ala Ile Thr Ala Val Tyr Thr
 180 185 190
 Val Ala Gly Gly Leu Ala Ala Val Ile Tyr Thr Asp Ala Leu Gln Thr
 195 200 205
 Leu Ile Met Leu Ile Gly Ala Leu Thr Leu Met Gly Tyr Ser Phe Ala
 210 215 220
 Ala Val Gly Gly Met Glu Gly Leu Lys Glu Lys Tyr Phe Leu Ala Leu
 225 230 235 240
 Ala Ser Asn Arg Ser Glu Asn Ser Ser Cys Gly Leu Pro Arg Glu Asp
 245 250 255
 Ala Phe His Ile Phe Arg Asp Pro Leu Thr Ser Asp Leu Pro Trp Pro
 260 265 270
 Gly Val Leu Phe Gly Met Ser Ile Pro Ser Leu Trp Tyr Trp Cys Thr
 275 280 285
 Asp Gln Val Ile Val Gln Arg Thr Leu Ala Ala Lys Asn Leu Ser His
 290 295 300
 Ala Lys Gly Gly Ala Leu Met Ala Ala Tyr Leu Lys Val Leu Pro Leu
 305 310 315 320
 Phe Ile Met Val Phe Pro Gly Met Val Ser Arg Ile Leu Phe Pro Asp
 325 330 335
 Gln Val Ala Cys Ala Asp Pro Glu Ile Cys Gln Lys Ile Cys Ser Asn
 340 345 350

Pro Ser Gly Cys Ser Asp Ile Ala Tyr Pro Lys Leu Val Leu Glu Leu
 355 360 365
 Leu Pro Thr Gly Leu Arg Gly Leu Met Met Ala Val Met Val Ala Ala
 370 375 380
 Leu Met Ser Ser Leu Thr Ser Ile Phe Asn Ser Ala Ser Thr Ile Phe
 385 390 395 400
 Thr Met Asp Leu Trp Asn His Leu Arg Pro Arg Ala Ser Glu Lys Glu
 405 410 415
 Leu Met Ile Val Gly Arg Val Phe Val Leu Leu Val Leu Val Ser
 420 425 430
 Ile Leu Trp Ile Pro Val Val Gln Ala Ser Gln Gly Gly Gln Leu Phe
 435 440 445
 Ile Tyr Ile Gln Ser Ile Ser Ser Tyr Leu Gln Pro Pro Val Ala Val
 450 455 460
 Val Phe Ile Met Gly Cys Phe Trp Lys Arg Thr Asn Glu Lys Gly Ala
 465 470 475 480
 Phe Trp Gly Leu Ile Ser Gly Leu Leu Leu Gly Leu Val Arg Leu Val
 485 490 495
 Leu Asp Phe Ile Tyr Val Gln Pro Arg Cys Asp Gln Pro Asp Glu Arg
 500 505 510
 Pro Val Leu Val Lys Ser Ile His Tyr Leu Tyr Phe Ser Met Ile Leu
 515 520 525
 Ser Thr Val Thr Leu Ile Thr Val Ser Thr Val Ser Trp Phe Thr Glu
 530 535 540
 Pro Pro Ser Lys Glu Met Val Ser His Leu Thr Trp Phe Thr Arg His
 545 550 555 560
 Asp Pro Val Val Gln Lys Glu Gln Ala Pro Pro Ala Ala Pro Leu Ser
 565 570 575
 Leu Thr Leu Ser Gln Asn Gly Met Pro Glu Ala Ser Ser Ser Ser Ser
 580 585 590
 Val Gln Phe Glu Met Val Gln Glu Asn Thr Ser Lys Thr His Ser Cys
 595 600 605
 Asp Met Thr Pro Lys Gln Ser Lys Val Val Lys Ala Ile Leu Trp Leu
 610 615 620
 Cys Gly Ile Gln Glu Lys Gly Lys Glu Glu Leu Pro Ala Arg Ala Glu
 625 630 635 640
 Ala Ile Ile Val Ser Leu Glu Glu Asn Pro Leu Val Lys Thr Leu Leu
 645 650 655
 Asp Val Asn Leu Ile Phe Cys Val Ser Cys Ala Ile Phe Ile Trp Gly
 660 665 670
 Tyr Phe Ala
 675

<210> 76

<211> 485

<212> PRT

<213> homo sapiens

<400> 76

Met Glu Pro Cys Trp Gly Glu Gly Leu Phe His Leu Ala Pro Pro Arg
 1 5 10 15
 His His Pro Gln Lys Ala Asp Trp His Phe Cys Pro Gln His Ile Gln
 20 25 30
 Glu Phe Thr Asn Glu Thr Trp Gln Ala Arg Thr Gly Glu Pro Leu Pro
 35 40 45
 Asp His Leu Val Leu Leu Met Trp Ser Leu Ile Val Ser Leu Tyr Pro
 50 55 60
 Leu Gly Gly Leu Phe Gly Ala Leu Leu Ala Gly Pro Leu Ala Ile Thr

```
<210> 77
<211> 496
<212> PRT
<213> homo sapiens
```


<400> 77
Met Arg Ala Leu Arg Arg Leu Ile Gln Gly Arg Ile Leu Leu Leu Thr
1 5 10 15
Ile Cys Ala Ala Gly Ile Gly Gly Thr Phe Gln Phe Gly Tyr Asn Leu
20 25 30
Ser Ile Ile Asn Ala Pro Thr Leu His Ile Gln Glu Phe Thr Asn Glu
35 40 45
Thr Trp Gln Ala Arg Thr Gly Glu Pro Leu Pro Asp His Leu Val Leu
50 55 60
Leu Met Trp Ser Leu Ile Val Ser Leu Tyr Pro Leu Gly Gly Leu Phe
65 70 75 80
Gly Ala Leu Leu Ala Gly Pro Leu Ala Ile Thr Leu Gly Arg Lys Lys
85 90 95
Ser Leu Leu Val Asn Asn Ile Phe Val Val Ser Ala Ala Ile Leu Phe
100 105 110
Gly Phe Ser Arg Lys Ala Gly Ser Phe Glu Met Ile Met Leu Gly Arg
115 120 125
Leu Leu Val Gly Val Asn Ala Gly Val Ser Met Asn Ile Gln Pro Met
130 135 140
Tyr Leu Gly Glu Ser Ala Pro Lys Glu Leu Arg Gly Ala Val Ala Met
145 150 155 160
Ser Ser Ala Ile Phe Thr Ala Leu Gly Ile Val Met Gly Gln Val Val
165 170 175
Gly Leu Arg Glu Leu Leu Gly Gly Pro Gln Ala Trp Pro Leu Leu Leu
180 185 190
Ala Ser Cys Leu Val Pro Gly Ala Leu Glu Leu Ala Ser Leu Pro Leu
195 200 205
Leu Pro Glu Ser Pro Arg Tyr Leu Leu Ile Asp Cys Gly Asp Thr Glu
210 215 220
Ala Cys Leu Ala Ala Leu Arg Arg Leu Arg Gly Ser Gly Asp Leu Ala
225 230 235 240
Gly Glu Leu Glu Glu Leu Glu Glu Glu Arg Ala Ala Cys Gln Gly Cys
245 250 255
Arg Ala Arg Arg Pro Trp Glu Leu Phe Gln His Arg Ala Leu Arg Arg
260 265 270
Gln Val Thr Ser Leu Val Val Leu Gly Ser Ala Met Glu Leu Cys Gly
275 280 285
Asn Asp Ser Val Tyr Ala Tyr Ala Ser Ser Val Phe Arg Lys Ala Gly
290 295 300
Val Pro Glu Ala Lys Ile Gln Tyr Ala Ile Ile Gly Thr Gly Ser Cys
305 310 315 320
Glu Leu Leu Thr Ala Val Val Ser Cys Val Val Ile Glu Arg Val Gly
325 330 335
Arg Arg Val Leu Leu Ile Gly Gly Tyr Ser Leu Met Thr Cys Trp Gly
340 345 350
Ser Ile Phe Thr Val Ala Leu Cys Leu Gln Ser Ser Phe Pro Trp Thr
355 360 365
Leu Tyr Leu Ala Met Ala Cys Ile Phe Ala Phe Ile Leu Ser Phe Gly
370 375 380
Ile Gly Pro Ala Gly Val Thr Gly Ile Leu Ala Thr Glu Leu Phe Asp
385 390 395 400
Gln Met Ala Arg Pro Ala Ala Cys Met Val Cys Gly Ala Leu Met Trp
405 410 415
Ile Met Leu Ile Leu Val Gly Leu Gly Phe Pro Phe Ile Met Glu Ala
420 425 430
Leu Ser His Phe Leu Tyr Val Pro Phe Leu Gly Val Cys Val Cys Gly
435 440 445
Ala Ile Tyr Thr Gly Leu Phe Leu Pro Glu Thr Lys Gly Lys Thr Phe

450
 Gln Glu Ile Ser Lys Glu Leu His Arg Leu Asn Phe Pro Arg Arg Ala
 465
 470
 Gln Gly Pro Thr Trp Arg Ser Leu Glu Val Ile Gln Ser Thr Glu Leu
 485
 490
 495

<210> 78
 <211> 500
 <212> PRT
 <213> homo sapiens

<400> 78
 Asx Met Leu His Ala Leu Leu Arg Ser Arg Met Ile Gln Gly Arg Ile
 1 5 10 15
 Leu Leu Leu Thr Ile Cys Ala Ala Gly Ile Gly Gly Thr Phe Gln Phe
 20 25 30
 Gly Tyr Asn Leu Ser Ile Ile Asn Ala Pro Thr Leu His Ile Gln Glu
 35 40 45
 Phe Thr Asn Glu Thr Trp Gln Ala Arg Thr Gly Glu Pro Leu Pro Asp
 50 55 60
 His Leu Val Leu Leu Met Trp Ser Leu Ile Val Ser Leu Tyr Pro Leu
 65 70 75 80
 Gly Gly Leu Phe Gly Ala Leu Leu Ala Gly Pro Leu Ala Ile Thr Leu
 85 90 95
 Gly Arg Lys Lys Ser Leu Leu Val Asn Asn Ile Phe Val Val Ser Ala
 100 105 110
 Ala Ile Leu Phe Gly Phe Ser Arg Lys Ala Gly Ser Phe Glu Met Ile
 115 120 125
 Met Leu Gly Arg Leu Leu Val Gly Val Asn Ala Gly Val Ser Met Asn
 130 135 140
 Ile Gln Pro Met Tyr Leu Gly Glu Ser Ala Pro Lys Glu Leu Arg Gly
 145 150 155 160
 Ala Val Ala Met Ser Ser Ala Ile Phe Thr Ala Leu Gly Ile Val Met
 165 170 175
 Gly Gln Val Val Gly Leu Arg Glu Leu Leu Gly Gly Pro Gln Ala Trp
 180 185 190
 Pro Leu Leu Leu Ala Ser Cys Leu Val Pro Gly Ala Leu Gln Leu Ala
 195 200 205
 Ser Leu Pro Leu Leu Pro Glu Ser Pro Arg Tyr Leu Leu Ile Asp Cys
 210 215 220
 Gly Asp Thr Glu Ala Cys Leu Ala Ala Leu Arg Arg Leu Arg Gly Ser
 225 230 235 240
 Gly Asp Leu Ala Gly Glu Leu Glu Glu Leu Glu Glu Glu Arg Ala Ala
 245 250 255
 Cys Gln Gly Cys Arg Ala Arg Arg Pro Trp Glu Leu Phe Gln His Arg
 260 265 270
 Ala Leu Arg Arg Gln Val Thr Ser Leu Val Val Leu Gly Ser Ala Met
 275 280 285
 Glu Leu Cys Gly Asn Asp Ser Val Tyr Ala Tyr Ala Ser Ser Val Phe
 290 295 300
 Arg Lys Ala Gly Val Pro Glu Ala Lys Ile Gln Tyr Ala Ile Ile Gly
 305 310 315 320
 Thr Gly Ser Cys Glu Leu Leu Thr Ala Val Val Ser Cys Val Val Ile
 325 330 335
 Glu Arg Val Gly Arg Arg Val Leu Leu Ile Gly Gly Tyr Ser Leu Met
 340 345 350
 Thr Cys Trp Gly Ser Ile Phe Thr Val Ala Leu Cys Leu Gln Ser Ser
 355 360 365

Phe Pro Trp Thr Leu Tyr Leu Ala Met Ala Cys Ile Phe Ala Phe Ile
 370 375 380
 Leu Ser Phe Gly Ile Gly Pro Ala Gly Val Thr Gly Ile Leu Ala Thr
 385 390 395 400
 Glu Leu Phe Asp Gln Met Ala Arg Pro Ala Ala Cys Met Val Cys Gly
 405 410 415
 Ala Leu Met Trp Ile Met Leu Ile Leu Val Gly Leu Gly Phe Pro Phe
 420 425 430
 Ile Met Glu Ala Leu Ser His Phe Leu Tyr Val Pro Phe Leu Gly Val
 435 440 445
 Cys Val Cys Gly Ala Ile Tyr Thr Gly Leu Phe Leu Pro Glu Thr Lys
 450 455 460
 Gly Lys Thr Phe Gln Glu Ile Ser Lys Glu Leu His Arg Leu Asn Phe
 465 470 475 480
 Pro Arg Arg Ala Gln Gly Pro Thr Trp Arg Ser Leu Glu Val Ile Gln
 485 490 495
 Ser Thr Glu Leu
 500

<210> 79
 <211> 1358
 <212> PRT
 <213> homo sapiens

<400> 79
 Met Val Val Val Lys Pro Met Asn Thr Met Ala Pro Val Val Thr Arg
 1 5 10 15
 Asn Thr Gly Leu Ile Leu Tyr Glu Gly Gln Ser Arg Pro Leu Thr Gly
 20 25 30
 Pro Ala Gly Ser Gly Pro Gln Asn Leu Val Ile Ser Asp Glu Asp Asp
 35 40 45
 Leu Glu Ala Val Arg Leu Glu Val Val Ala Gly Leu Arg His Gly His
 50 55 60
 Leu Val Ile Leu Gly Ala Ser Ser Gly Ser Ser Ala Pro Lys Ser Phe
 65 70 75 80
 Thr Val Ala Glu Leu Ala Ala Gly Gln Val Val Tyr Gln His Asp Asp
 85 90 95
 Arg Asp Gly Ser Leu Ser Asp Asn Leu Val Leu Arg Met Val Asp Gly
 100 105 110
 Gly Gly Arg His Gln Val Gln Phe Leu Phe Pro Ile Thr Leu Val Pro
 115 120 125
 Val Asp Asp Gln Pro Pro Val Leu Asn Ala Asn Thr Gly Leu Thr Leu
 130 135 140
 Ala Glu Gly Glu Thr Val Pro Ile Leu Pro Leu Ser Leu Ser Ala Thr
 145 150 155 160
 Asp Met Asp Ser Asp Ser Leu Leu Leu Phe Val Leu Glu Ser Pro
 165 170 175
 Phe Leu Thr Thr Gly His Leu Leu Leu Arg Gln Thr His Pro Pro His
 180 185 190
 Glu Lys Gln Glu Leu Leu Arg Gly Leu Trp Arg Lys Glu Gly Ala Phe
 195 200 205
 Tyr Glu Arg Thr Val Thr Glu Trp Gln Gln Gln Asp Ile Thr Glu Gly
 210 215 220
 Arg Leu Phe Tyr Arg His Ser Gly Pro His Ser Pro Gly Pro Val Thr
 225 230 235 240
 Asp Gln Phe Thr Phe Arg Val Gln Asp Asn His Asp Pro Pro Asn Gln
 245 250 255
 Ser Gly Leu Gln Arg Phe Val Ile Arg Ile His Pro Val Asp Arg Leu

260 265 270
 Pro Pro Glu Leu Gly Ser Gly Cys Pro Leu Arg Met Val Val Gln Glu
 275 280 285
 Ser Gln Leu Thr Pro Leu Arg Lys Lys Trp Leu Arg Tyr Thr Asp Leu
 290 295 300
 Asp Thr Asp Asp Arg Glu Leu Arg Tyr Thr Val Thr Gln Ser Pro Thr
 305 310 315 320
 Asp Thr Asp Glu Asn His Leu Pro Ala Pro Leu Gly Thr Leu Val Leu
 325 330 335
 Thr Asp Asn Pro Ser Val Val Val Thr His Phe Thr Gln Ala Gln Ile
 340 345 350
 Asn His His Lys Ile Ala Tyr Arg Pro Pro Gly Gln Glu Leu Gly Val
 355 360 365
 Ala Thr Arg Val Ala Gln Phe Gln Phe Gln Val Glu Asp Arg Ala Gly
 370 375 380
 Asn Val Ala Pro Gly Thr Phe Thr Leu Tyr Leu His Pro Val Asp Asn
 385 390 395 400
 Gln Pro Pro Glu Ile Leu Asn Thr Gly Phe Thr Ile Gln Glu Lys Gly
 405 410 415
 His His Ile Leu Ser Glu Thr Glu Leu His Val Asn Asp Val Asp Thr
 420 425 430
 Asp Val Ala His Ile Ser Phe Thr Leu Thr Gln Ala Pro Lys His Gly
 435 440 445
 His Met Arg Val Ser Gly Gln Ile Leu His Val Gly Gly Leu Phe His
 450 455 460
 Leu Glu Asp Ile Lys Gln Gly Arg Val Ser Tyr Ala His Asn Gly Asp
 465 470 475 480
 Lys Ser Leu Thr Asp Ser Cys Ser Leu Glu Val Ser Asp Arg His His
 485 490 495
 Val Val Pro Ile Thr Leu Arg Val Asn Val Arg Pro Val Asp Asp Glu
 500 505 510
 Val Pro Ile Leu Ser His Pro Thr Gly Thr Leu Glu Ser Tyr Leu Asp
 515 520 525
 Val Leu Glu Asn Gly Ala Thr Glu Ile Thr Ala Asn Val Ile Lys Gly
 530 535 540
 Thr Asn Glu Glu Thr Asp Asp Leu Met Leu Thr Phe Leu Leu Glu Asp
 545 550 555 560
 Pro Pro Leu Tyr Gly Glu Ile Leu Val Asn Gly Ile Pro Ala Glu Gln
 565 570 575
 Phe Thr Gln Arg Asp Ile Leu Glu Gly Ser Val Val Tyr Thr His Thr
 580 585 590
 Ser Gly Glu Ile Gly Leu Leu Pro Lys Ala Asp Ser Phe Asn Leu Ser
 595 600 605
 Leu Ser Asp Met Ser Gln Glu Trp Arg Ile Gly Gly Asn Thr Ile Gln
 610 615 620
 Gly Val Thr Ile Trp Val Thr Ile Leu Pro Val Asp Ser Gln Ala Pro
 625 630 635 640
 Glu Ile Phe Val Gly Glu Gln Leu Ile Val Met Glu Gly Asp Lys Ser
 645 650 655
 Val Ile Thr Ser Val His Ile Ser Ala Glu Asp Val Asp Ser Leu Asn
 660 665 670
 Asp Asp Ile Leu Cys Thr Ile Val Ile Gln Pro Thr Ser Gly Tyr Val
 675 680 685
 Glu Asn Ile Ser Pro Ala Pro Gly Ser Glu Lys Ser Arg Ala Gly Ile
 690 695 700
 Ala Ile Ser Ala Phe Asn Leu Lys Asp Leu Arg Gln Gly His Ile Asn
 705 710 715 720
 Tyr Val Gln Ser Val His Lys Gly Val Glu Pro Val Glu Asp Arg Phe
 725 730 735

Val Phe Arg Cys Ser Asp Gly Ile Asn Phe Ser Glu Arg Gln Phe Phe
 740 745 750
 Pro Ile Val Ile Ile Pro Thr Asn Asp Glu Gln Pro Glu Met Phe Met
 755 760 765
 Arg Glu Phe Met Val Met Glu Gly Met Ser Leu Val Ile Asp Thr Pro
 770 775 780
 Ile Leu Asn Ala Ala Asp Ala Asp Val Pro Leu Asp Asp Leu Thr Phe
 785 790 795 800
 Thr Ile Thr Gln Phe Pro Thr His Gly His Ile Met Asn Gln Leu Ile
 805 810 815
 Asn Gly Thr Val Leu Val Glu Ser Phe Thr Leu Asp Gln Ile Ile Glu
 820 825 830
 Ser Ser Ser Ile Ile Tyr Glu His Asp Asp Ser Glu Thr Gln Glu Asp
 835 840 845
 Ser Phe Val Ile Lys Leu Thr Asp Gly Lys His Ser Val Glu Lys Thr
 850 855 860
 Val Leu Ile Ile Val Ile Pro Val Asp Asp Glu Thr Pro Arg Met Thr
 865 870 875 880
 Ile Asn Asn Gly Leu Glu Ile Glu Ile Gly Asp Thr Lys Ile Ile Asn
 885 890 895
 Asn Lys Ile Leu Met Ala Thr Asp Leu Asp Ser Glu Asp Lys Ser Leu
 900 905 910
 Val Tyr Ile Ile Arg Tyr Gly Pro Gly His Gly Leu Leu Gln Arg Arg
 915 920 925
 Lys Pro Thr Gly Ala Phe Glu Asn Ile Thr Leu Gly Met Asn Phe Thr
 930 935 940
 Gln Asp Glu Val Asp Arg Asn Leu Ile Gln Tyr Val His Leu Gly Gln
 945 950 955 960
 Glu Gly Ile Arg Asp Leu Ile Lys Phe Asp Val Thr Asp Gly Ile Asn
 965 970 975
 Pro Leu Ile Asp Arg Tyr Phe Tyr Val Ser Ile Gly Ser Ile Asp Ile
 980 985 990
 Val Phe Pro Asp Val Ile Ser Lys Gly Val Ser Leu Lys Glu Gly Gly
 995 1000 1005
 Lys Val Thr Leu Thr Thr Asp Leu Leu Ser Thr Ser Asp Leu Asn Ser
 1010 1015 1020
 Pro Asp Glu Asn Leu Val Phe Thr Ile Thr Arg Ala Pro Met Arg Gly
 1025 1030 1035 1040
 His Leu Glu Cys Thr Asp Gln Pro Gly Val Ser Ile Thr Ser Phe Thr
 1045 1050 1055
 Gln Leu Gln Leu Ala Gly Asn Lys Ile Tyr Tyr Ile His Thr Ala Asp
 1060 1065 1070
 Asp Glu Val Lys Met Asp Ser Phe Glu Phe Gln Val Thr Asp Gly Arg
 1075 1080 1085
 Asn Pro Val Phe Arg Thr Phe Arg Ile Ser Ile Ser Asp Val Asp Asn
 1090 1095 1100
 Lys Lys Pro Val Val Thr Ile His Lys Leu Val Val Ser Glu Ser Glu
 1105 1110 1115 1120
 Asn Lys Leu Ile Thr Pro Phe Glu Leu Thr Val Glu Asp Arg Asp Thr
 1125 1130 1135
 Pro Asp Lys Leu Leu Lys Phe Thr Ile Thr Gln Val Pro Ile His Gly
 1140 1145 1150
 His Leu Leu Phe Asn Asn Thr Arg Pro Val Met Val Phe Thr Lys Gln
 1155 1160 1165
 Asp Leu Asn Glu Asn Leu Ile Ser Tyr Lys His Asp Gly Thr Glu Ser
 1170 1175 1180
 Ser Glu Asp Ser Phe Ser Phe Thr Val Thr Asp Gly Thr His Thr Asp
 1185 1190 1195 1200
 Phe Tyr Val Phe Pro Asp Thr Val Phe Glu Thr Arg Arg Pro Gln Val

1205 1210 1215
 Met Lys Ile Gln Val Leu Ala Val Asp Asn Ser Val Pro Gln Ile Ala
 1220 1225 1230
 Val Asn Lys Gly Ala Ser Thr Leu Arg Thr Leu Ala Thr Gly His Leu
 1235 1240 1245
 Gly Phe Met Ile Thr Ser Lys Ile Leu Lys Val Glu Asp Arg Asp Ser
 1250 1255 1260
 Leu His Ile Ser Leu Arg Phe Ile Val Thr Glu Ala Pro Gln His Gly
 1265 1270 1275 1280
 Tyr Leu Leu Asn Leu Asp Lys Gly Asn His Ser Ile Thr Gln Phe Thr
 1285 1290 1295
 Gln Ala Asp Ile Asp Asp Met Lys Ile Cys Tyr Val Leu Arg Glu Gly
 1300 1305 1310
 Ala Asn Ala Thr Ser Asp Met Phe Tyr Phe Ala Val Glu Asp Gly Gly
 1315 1320 1325
 Lys Tyr Ser Pro Leu Leu Val Val Thr Ala Arg Arg Asp Ala Phe Leu
 1330 1335 1340
 Gly Cys Ser Leu Met Thr Leu Leu Gln Glu Val Phe Ile Lys
 1345 1350 1355

<210> 80
 <211> 3105
 <212> PRT
 <213> homo sapiens

<400> 80
 Met Ala Arg Ser Trp Leu Thr Ala Thr Ser Thr Ser Arg Pro Ala Ala
 1 5 10 15
 Phe Gly Arg Ala Leu Leu Ser Pro Gly Leu Ala Gly Ala Ala Gly Val
 20 25 30
 Pro Ala Glu Glu Ala Ile Val Leu Ala Asn Arg Gly Leu Arg Val Pro
 35 40 45
 Phe Gly Arg Glu Val Trp Leu Asp Pro Leu His Asp Leu Val Leu Gln
 50 55 60
 Val Gln Pro Gly Asp Arg Cys Ala Val Ser Val Leu Asp Asn Asp Ala
 65 70 75 80
 Leu Ala Gln Arg Pro Gly Arg Leu Ser Pro Lys Arg Phe Pro Cys Asp
 85 90 95
 Phe Gly Pro Gly Glu Val Arg Tyr Ser His Leu Gly Ala Arg Ser Pro
 100 105 110
 Ser Arg Asp Arg Val Arg Leu Gln Leu Arg Tyr Asp Ala Pro Gly Gly
 115 120 125
 Ala Val Val Leu Pro Leu Val Leu Glu Val Glu Val Val Phe Thr Gln
 130 135 140
 Leu Glu Val Val Thr Arg Asn Leu Pro Leu Val Val Glu Glu Leu Leu
 145 150 155 160
 Gly Thr Ser Asn Ala Leu Asp Ala Arg Ser Leu Glu Phe Ala Phe Gln
 165 170 175
 Pro Glu Thr Glu Glu Cys Arg Val Gly Ile Leu Ser Gly Leu Gly Ala
 180 185 190
 Leu Pro Arg Tyr Gly Glu Leu Leu His Tyr Pro Gln Val Pro Gly Gly
 195 200 205
 Ala Arg Glu Gly Gly Ala Pro Glu Thr Leu Leu Met Asp Cys Lys Ala
 210 215 220
 Phe Gln Glu Leu Gly Val Arg Tyr Arg His Thr Ala Ala Ser Arg Ser
 225 230 235 240
 Pro Asn Arg Asp Trp Ile Pro Met Val Val Glu Leu Arg Ser Arg Gly
 245 250 255

Ala Pro Val Gly Ser Pro Ala Leu Lys Arg Glu His Phe Gln Val Leu
 260 265 270
 Val Arg Ile Arg Gly Gly Ala Glu Asn Thr Ala Pro Lys Pro Ser Phe
 275 280 285
 Val Ala Met Met Met Met Glu Val Asp Gln Phe Val Leu Thr Ala Leu
 290 295 300
 Thr Pro Asp Met Leu Ala Ala Glu Asp Ala Glu Ser Pro Ser Asp Leu
 305 310 315 320
 Leu Ile Phe Asn Leu Thr Ser Pro Phe Gln Pro Gly Gln Gly Tyr Leu
 325 330 335
 Val Ser Thr Asp Asp Arg Ser Leu Pro Leu Ser Ser Phe Thr Gln Arg
 340 345 350
 Asp Leu Arg Leu Leu Lys Ile Ala Tyr Gln Pro Pro Ser Glu Asp Ser
 355 360 365
 Asp Gln Glu Arg Leu Phe Glu Leu Glu Leu Glu Val Val Asp Leu Glu
 370 375 380
 Gly Ala Ala Ser Asp Pro Phe Ala Phe Met Val Val Val Lys Pro Met
 385 390 395 400
 Asn Thr Met Ala Pro Val Val Thr Arg Asn Thr Gly Leu Ile Leu Tyr
 405 410 415
 Glu Gly Gln Ser Arg Pro Leu Thr Gly Pro Ala Gly Ser Gly Pro Gln
 420 425 430
 Asn Leu Val Ile Ser Asp Glu Asp Asp Leu Glu Ala Val Arg Leu Glu
 435 440 445
 Val Val Ala Gly Leu Arg His Gly His Leu Val Ile Leu Gly Ala Ser
 450 455 460
 Ser Gly Ser Ser Ala Pro Lys Ser Phe Thr Val Ala Glu Leu Ala Ala
 465 470 475 480
 Gly Gln Val Val Tyr Gln His Asp Asp Arg Asp Gly Ser Leu Ser Asp
 485 490 495
 Asn Leu Val Leu Arg Met Val Asp Gly Gly Arg His Gln Val Gln
 500 505 510
 Phe Leu Phe Pro Ile Thr Leu Val Pro Val Asp Asp Gln Pro Pro Val
 515 520 525
 Leu Asn Ala Asn Thr Gly Leu Thr Leu Ala Glu Gly Glu Thr Val Pro
 530 535 540
 Ile Leu Pro Leu Ser Leu Ser Ala Thr Asp Met Asp Ser Asp Asp Ser
 545 550 555 560
 Leu Leu Leu Phe Val Leu Glu Ser Pro Phe Leu Thr Thr Gly His Leu
 565 570 575
 Leu Leu Arg Gln Thr His Pro Pro His Glu Lys Gln Glu Leu Leu Arg
 580 585 590
 Gly Leu Trp Arg Lys Glu Gly Ala Phe Tyr Glu Arg Thr Val Thr Glu
 595 600 605
 Trp Gln Gln Gln Asp Ile Thr Glu Gly Arg Leu Phe Tyr Arg His Ser
 610 615 620
 Gly Pro His Ser Pro Gly Pro Val Thr Asp Gln Phe Thr Phe Arg Val
 625 630 635 640
 Gln Asp Asn His Asp Pro Pro Asn Gln Ser Gly Leu Gln Arg Phe Val
 645 650 655
 Ile Arg Ile His Pro Val Asp Arg Leu Pro Pro Glu Leu Gly Ser Gly
 660 665 670
 Cys Pro Leu Arg Met Val Val Gln Glu Ser Gln Leu Thr Pro Leu Arg
 675 680 685
 Lys Lys Trp Leu Arg Tyr Thr Asp Leu Asp Thr Asp Arg Glu Leu
 690 695 700
 Arg Tyr Thr Val Thr Gln Pro Pro Thr Asp Thr Asp Glu Asn His Leu
 705 710 715 720
 Pro Ala Pro Leu Gly Thr Leu Val Leu Thr Asp Asn Pro Ser Val Val

725 730 735
 Val Thr His Phe Thr Gln Ala Gln Ile Asn His His Lys Ile Ala Tyr
 740 745 750
 Arg Pro Pro Gly Gln Glu Leu Gly Val Ala Thr Arg Val Ala Gln Phe
 755 760 765
 Gln Phe Gln Val Glu Asp Arg Ala Gly Asn Val Ala Pro Gly Thr Phe
 770 775 780
 Thr Leu Tyr Leu His Pro Val Asp Asn Gln Pro Pro Glu Ile Leu Asn
 785 790 795 800
 Thr Gly Phe Thr Ile Gln Glu Lys Gly His His Ile Leu Ser Glu Thr
 805 810 815
 Glu Leu His Val Asn Asp Val Asp Thr Asp Val Ala His Ile Ser Phe
 820 825 830
 Thr Leu Thr Gln Ala Pro Lys His Gly His Met Arg Val Ser Gly Gln
 835 840 845
 Ile Leu His Val Gly Gly Leu Phe His Leu Glu Asp Ile Lys Gln Gly
 850 855 860
 Arg Val Ser Tyr Ala His Asn Gly Asp Lys Ser Leu Thr Asp Ser Cys
 865 870 875 880
 Ser Leu Glu Val Ser Asp Arg His His Val Val Pro Ile Thr Leu Arg
 885 890 895
 Val Asn Val Arg Pro Val Asp Asp Glu Val Pro Ile Leu Ser His Pro
 900 905 910
 Thr Gly Thr Leu Glu Ser Tyr Leu Asp Val Leu Glu Asn Gly Ala Thr
 915 920 925
 Glu Ile Thr Ala Asn Val Ile Lys Gly Thr Asn Glu Glu Thr Asp Asp
 930 935 940
 Leu Met Leu Thr Phe Leu Leu Glu Asp Pro Pro Leu Tyr Gly Glu Ile
 945 950 955 960
 Leu Val Asn Gly Ile Pro Ala Glu Gln Phe Thr Gln Arg Asp Ile Leu
 965 970 975
 Glu Gly Ser Val Val Tyr Thr His Thr Ser Gly Glu Ile Gly Leu Leu
 980 985 990
 Pro Lys Ala Asp Ser Phe Asn Leu Ser Leu Ser Asp Lys Ser Gln Glu
 995 1000 1005
 Trp Arg Ile Gly Gly Asn Thr Ile Gln Gly Val Thr Ile Trp Val Thr
 1010 1015 1020
 Ile Leu Pro Val Asp Ser Gln Ala Pro Glu Ile Ser Val Gly Glu Gln
 1025 1030 1035 1040
 Leu Ile Val Met Glu Gly Asp Lys Ser Val Ile Thr Ser Val His Ile
 1045 1050 1055
 Ser Ala Glu Asp Val Asp Ser Leu Asn Asp Asp Ile Leu Cys Thr Ile
 1060 1065 1070
 Val Ile Gln Pro Thr Ser Gly Tyr Val Glu Asn Ile Ser Pro Ala Pro
 1075 1080 1085
 Gly Ser Glu Lys Ser Arg Ala Gly Ile Ala Ile Ser Ala Phe Asn Leu
 1090 1095 1100
 Lys Asp Leu Arg Gln Gly His Ile Asn Tyr Val Gln Ser Val His Lys
 1105 1110 1115 1120
 Gly Val Glu Pro Val Glu Asp Arg Phe Val Phe Arg Cys Ser Asp Gly
 1125 1130 1135
 Ile Asn Phe Ser Glu Arg Gln Phe Phe Pro Ile Val Ile Ile Pro Thr
 1140 1145 1150
 Asn Asp Glu Gln Pro Glu Met Phe Met Arg Glu Phe Met Val Met Glu
 1155 1160 1165
 Gly Met Ser Leu Val Ile Asp Thr Pro Ile Leu Asn Ala Ala Asp Ala
 1170 1175 1180
 Asp Val Pro Leu Asp Asp Leu Thr Phe Thr Ile Thr Gln Phe Pro Thr
 1185 1190 1195 1200

His Gly His Ile Met Asn Gln Leu Ile Asn Gly Thr Val Leu Val Glu
 1205 1210 1215
 Ser Phe Thr Leu Asp Gln Ile Ile Glu Ser Ser Ser Ile Ile Tyr Glu
 1220 1225 1230
 His Asp Asp Ser Glu Thr Gln Glu Asp Ser Phe Val Ile Lys Leu Thr
 1235 1240 1245
 Asp Gly Lys His Ser Val Glu Lys Thr Val Leu Ile Ile Val Ile Pro
 1250 1255 1260
 Val Asp Asp Glu Thr Pro Arg Met Thr Ile Asn Asn Gly Leu Glu Ile
 1265 1270 1275 1280
 Glu Ile Gly Asp Thr Lys Ile Ile Asn Asn Lys Ile Leu Met Ala Thr
 1285 1290 1295
 Asp Leu Asp Ser Glu Asp Lys Ser Leu Val Tyr Ile Ile Arg Tyr Gly
 1300 1305 1310
 Pro Gly His Gly Leu Leu Gln Arg Arg Lys Pro Thr Gly Ala Phe Glu
 1315 1320 1325
 Asn Ile Thr Leu Gly Met Asn Phe Thr Gln Asp Glu Val Asp Arg Asn
 1330 1335 1340
 Leu Ile Gln Tyr Val His Leu Gly Gln Glu Gly Ile Arg Asp Leu Ile
 1345 1350 1355 1360
 Lys Phe Asp Val Thr Asp Gly Ile Asn Pro Leu Ile Asp Arg Tyr Phe
 1365 1370 1375
 Tyr Val Ser Ile Gly Ser Ile Asp Ile Val Phe Pro Asp Val Ile Ser
 1380 1385 1390
 Lys Gly Val Ser Leu Lys Glu Gly Lys Val Thr Leu Thr Thr Asp
 1395 1400 1405
 Leu Leu Ser Thr Ser Asp Leu Asn Ser Pro Asp Glu Asn Leu Val Phe
 1410 1415 1420
 Thr Ile Thr Arg Ala Pro Met Arg Gly His Leu Glu Cys Thr Asp Gln
 1425 1430 1435 1440
 Pro Gly Val Ser Ile Thr Ser Phe Thr Gln Leu Gln Leu Ala Gly Asn
 1445 1450 1455
 Lys Ile Tyr Tyr Ile His Thr Ala Asp Asp Glu Val Lys Met Asp Ser
 1460 1465 1470
 Phe Glu Phe Gln Val Thr Asp Gly Arg Asn Pro Val Phe Arg Thr Phe
 1475 1480 1485
 Arg Ile Ser Ile Ser Asp Val Asp Asn Lys Lys Pro Val Val Thr Ile
 1490 1495 1500
 His Lys Leu Val Val Ser Glu Ser Glu Asn Lys Leu Ile Thr Pro Phe
 1505 1510 1515 1520
 Glu Leu Thr Val Glu Asp Arg Asp Thr Pro Asp Lys Leu Leu Lys Phe
 1525 1530 1535
 Thr Ile Thr Gln Val Pro Ile His Gly His Leu Leu Phe Asn Asn Thr
 1540 1545 1550
 Arg Pro Val Met Val Phe Thr Lys Gln Asp Leu Asn Glu Asn Leu Ile
 1555 1560 1565
 Ser Tyr Lys His Asp Gly Thr Glu Ser Ser Glu Asp Ser Phe Ser Phe
 1570 1575 1580
 Thr Val Thr Asp Gly Thr His Thr Asp Phe Tyr Val Phe Pro Asp Thr
 1585 1590 1595 1600
 Val Phe Glu Thr Arg Arg Pro Gln Val Met Lys Ile Gln Val Leu Ala
 1605 1610 1615
 Val Asp Asn Ser Val Pro Gln Ile Ala Val Asn Lys Gly Ala Ser Thr
 1620 1625 1630
 Leu Arg Thr Leu Ala Thr Gly His Leu Gly Phe Met Ile Thr Ser Lys
 1635 1640 1645
 Ile Leu Lys Val Glu Asp Arg Asp Ser Leu His Ile Ser Leu Arg Phe
 1650 1655 1660
 Ile Val Thr Glu Ala Pro Gln His Gly Tyr Leu Leu Asn Leu Asp Lys

1665 1670 1675 1680
Gly Asn His Ser Ile Thr Gln Phe Thr Gln Ala Asp Ile Asp Asp Met
1685 1690 1695
Lys Ile Cys Tyr Val Leu Arg Glu Gly Ala Asn Ala Thr Ser Asp Met
1700 1705 1710
Phe Tyr Phe Ala Val Glu Asp Gly Gly Gly Asn Lys Leu Thr Tyr Gln
1715 1720 1725
Asn Phe Arg Leu Asn Trp Ala Trp Ile Ser Phe Glu Lys Glu Tyr Tyr
1730 1735 1740
Leu Val Asn Glu Asp Ser Lys Phe Leu Asp Val Val Leu Lys Arg Arg
1745 1750 1755 1760
Gly Tyr Leu Gly Glu Thr Ser Phe Ile Ser Ile Gly Thr Arg Asp Arg
1765 1770 1775
Thr Ala Glu Lys Asp Lys Asp Phe Lys Gly Lys Ala Gln Lys Gln Val
1780 1785 1790
Gln Phe Asn Pro Gly Gln Thr Arg Ala Thr Trp Arg Val Arg Ile Leu
1795 1800 1805
Ser Asp Gly Glu His Glu Gln Ser Glu Thr Phe Gln Val Val Leu Ser
1810 1815 1820
Glu Pro Val Leu Ala Ala Leu Glu Phe Pro Thr Val Ala Thr Val Glu
1825 1830 1835 1840
Ile Val Asp Pro Gly Asp Glu Pro Thr Val Phe Ile Pro Gln Ser Lys
1845 1850 1855
Tyr Ser Val Glu Glu Asp Val Gly Glu Leu Phe Ile Pro Ile Arg Arg
1860 1865 1870
Ser Gly Asp Val Ser Gln Glu Leu Met Val Val Cys Tyr Thr Gln Gln
1875 1880 1885
Gly Thr Ala Thr Gly Thr Val Pro Thr Ser Val Leu Ser Tyr Ser Asp
1890 1895 1900
Tyr Ile Ser Arg Pro Glu Asp His Thr Ser Val Val Arg Phe Asp Lys
1905 1910 1915 1920
Asp Glu Arg Glu Lys Leu Cys Arg Ile Val Ile Ile Asp Asp Ser Leu
1925 1930 1935
Tyr Glu Glu Glu Glu Thr Phe His Val Leu Leu Ser Met Pro Met Gly
1940 1945 1950
Gly Arg Ile Gly Ser Glu Phe Pro Gly Ala Gln Val Thr Ile Val Pro
1955 1960 1965
Asp Lys Asp Asp Gly Pro Ser Asp Ser Lys Phe Asn Val Ala Glu Asn
1970 1975 1980
Tyr Ser Leu Leu Pro Phe Thr Cys Phe Gln Gly Ser Ile Ala Thr Ala
1985 1990 1995 2000
Glu Ala Ala Thr Gln Gly Gly Gly Arg Ser Thr Arg Gln Val Ala Ala
2005 2010 2015
Val Lys Lys Asp Lys Asp Phe Lys Gly Lys Ala Gln Lys Gln Val Gln
2020 2025 2030
Phe Asn Pro Gly Gln Thr Arg Ala Thr Trp Arg Val Arg Ile Leu Ser
2035 2040 2045
Asp Gly Glu His Glu Gln Ser Glu Thr Phe Gln Val Val Leu Ser Glu
2050 2055 2060
Pro Val Leu Ala Ala Leu Glu Phe Pro Thr Val Ala Thr Val Glu Ile
2065 2070 2075 2080
Val Asp Pro Gly Asp Ala Cys Pro Trp Gly Glu Glu Ser Asp Gln Ser
2085 2090 2095
Ser Gln Gly Leu Lys Leu Gln Ser Phe Leu Thr Lys Met Met Val Ser
2100 2105 2110
Thr Asn Leu Leu Glu Asn Ser Phe Ser Arg Glu Asp Gln His Gln Glu
2115 2120 2125
Gln Leu Ser Arg Gln Lys Lys Trp Glu Ser Lys Thr Met Ile Ile Tyr
2130 2135 2140

Thr Phe Ile Leu Cys Glu Thr Glu Lys Pro Cys Ile Leu Glu Leu Met
 2145 2150 2155 2160
 Asp Asp Val Leu Tyr Glu Glu Val Glu Glu Leu Arg Leu Val Leu Gly
 2165 2170 2175
 Thr Pro Gln Ser Asn Ser Pro Phe Gly Ala Ala Val Gly Glu Gln Asn
 2180 2185 2190
 Glu Thr Leu Ile Arg Ile Arg Asp Asp Ala Asp Lys Thr Val Ile Lys
 2195 2200 2205
 Phe Gly Glu Thr Lys Phe Ser Val Thr Glu Pro Lys Glu Pro Gly Glu
 2210 2215 2220
 Ser Val Val Ile Arg Ile Pro Val Ile Arg Gln Gly Asp Thr Ser Lys
 2225 2230 2235 2240
 Val Ser Ile Val Arg Val His Thr Lys Asp Gly Ser Ala Thr Ser Gly
 2245 2250 2255
 Glu Asp Tyr His Pro Val Ser Glu Glu Ile Glu Phe Lys Glu Gly Glu
 2260 2265 2270
 Thr Gln His Val Val Glu Ile Glu Val Thr Phe Asp Gly Val Arg Glu
 2275 2280 2285
 Met Arg Glu Ala Phe Thr Val His Leu Lys Pro Asp Glu Asn Met Ile
 2290 2295 2300
 Ala Glu Met Gln Leu Ser Asn Phe Glu Leu Thr Leu Ser Pro Asp Gly
 2305 2310 2315 2320
 Thr Arg Val Gly Asn His Lys Cys Ser Asn Leu Leu Asp Tyr Thr Glu
 2325 2330 2335
 Val Lys Thr His Tyr Gly Phe Leu Thr Asp Ala Thr Lys Asn Pro Glu
 2340 2345 2350
 Ile Ile Gly Glu Thr Tyr Pro Tyr Gln Tyr Ser Leu Ser Ile Arg Gly
 2355 2360 2365
 Ser Thr Thr Leu Arg Phe Tyr Arg Asn Leu Asn Leu Glu Ala Cys Leu
 2370 2375 2380
 Trp Glu Phe Val Ser Tyr Tyr Asp Met Ser Glu Leu Leu Ala Asp Cys
 2385 2390 2395 2400
 Arg Ser Val Leu Asn Ala Ser Ile Phe His Glu Met Ala Pro Glu Gly
 2405 2410 2415
 Lys Gln Ser Lys Cys Leu Val Asn Ser Thr Leu Tyr Ser Ile Leu Glu
 2420 2425 2430
 Cys His Glu Ser Leu Pro Asn Phe Cys Ile Ser Ala Leu Arg Met Gly
 2435 2440 2445
 Lys Trp Arg Lys Ile Lys Ser Lys Pro Ser Ala Gln Thr Pro Cys Ala
 2450 2455 2460
 Gln Arg Leu Arg Gly Phe Ile Asp His Pro Arg Lys Gln Pro Leu Gln
 2465 2470 2475 2480
 Gln Ala Ser Ala Asp Pro Gly Met Leu Pro Val Ile Ser Thr Arg Glu
 2485 2490 2495
 Leu Ser Asn Phe Glu Leu Thr Leu Ser Pro Asp Gly Thr Arg Val Gly
 2500 2505 2510
 Asn His Lys Cys Ser Asn Leu Leu Asp Tyr Thr Glu Val Lys Thr His
 2515 2520 2525
 Tyr Gly Phe Leu Thr Asp Ala Thr Lys Asn Pro Glu Ile Ile Gly Glu
 2530 2535 2540
 Thr Tyr Pro Tyr Gln Tyr Ser Leu Ser Ile Arg Gly Ser Thr Thr Leu
 2545 2550 2555 2560
 Arg Phe Tyr Arg Asn Leu Asn Leu Glu Ala Cys Leu Trp Glu Phe Val
 2565 2570 2575
 Ser Tyr Tyr Asp Met Ser Glu Leu Leu Ala Asp Cys Gly Gly Thr Ile
 2580 2585 2590
 Gly Thr Asp Gly Gln Val Leu Asn Leu Val Gln Ser Tyr Val Thr Leu
 2595 2600 2605
 Arg Val Pro Leu Tyr Val Ser Tyr Val Phe His Ser Pro Val Gly Val

2610 2615 2620
 Gly Gly Trp Gln His Phe Asp Leu Lys Ser Glu Leu Arg Leu Thr Phe
 2625 2630 2635 2640
 Val Tyr Asp Thr Ala Ile Leu Trp Asn Asp Gly Ile Gly Ser Pro Pro
 2645 2650 2655
 Glu Ala Glu Leu Gln Gly Ser Leu Tyr Pro Thr Ser Met Arg Ile Gly
 2660 2665 2670
 Asp Glu Gly Arg Leu Ala Val His Phe Lys Thr Glu Ala Gln Phe His
 2675 2680 2685
 Gly Leu Phe Val Leu Ser His Pro Ala Ser Phe Thr Ser Ser Val Ile
 2690 2695 2700
 Met Ser Ala Asp His Pro Gly Leu Thr Phe Ser Leu Arg Leu Ile Arg
 2705 2710 2715 2720
 Ser Glu Pro Thr Tyr Asn Gln Pro Val Gln Gln Trp Ser Phe Val Ser
 2725 2730 2735
 Asp Phe Ala Val Arg Asp Tyr Ser Gly Thr Tyr Thr Val Lys Leu Val
 2740 2745 2750
 Pro Cys Thr Ala Pro Ser His Gln Glu Tyr Arg Leu Pro Val Thr Cys
 2755 2760 2765
 Asn Pro Arg Glu Pro Val Thr Phe Asp Leu Asp Ile Arg Phe Gln Gln
 2770 2775 2780
 Val Ser Asp Pro Val Ala Ala Glu Phe Ser Leu Asn Thr Gln Met Tyr
 2785 2790 2795 2800
 Leu Leu Ser Lys Lys Ser Leu Trp Leu Ser Asp Gly Ser Met Gly Phe
 2805 2810 2815
 Gly Gln Glu Ser Asp Val Ala Phe Ala Glu Gly Asp Ile Ile Tyr Gly
 2820 2825 2830
 Arg Val Met Val Asp Pro Val Gln Asn Leu Gly Asp Ser Phe Tyr Cys
 2835 2840 2845
 Ser Ile Glu Lys Val Phe Leu Cys Thr Gly Ala Asp Gly Tyr Val Pro
 2850 2855 2860
 Lys Tyr Ser Pro Met Asn Ala Glu Tyr Gly Cys Leu Ala Asp Ser Pro
 2865 2870 2875 2880
 Ser Leu Leu Tyr Arg Phe Lys Ile Val Asp Lys Ala Gln Pro Glu Thr
 2885 2890 2895
 Gln Ala Thr Ser Phe Gly Asn Val Leu Phe Asn Ala Lys Leu Ala Val
 2900 2905 2910
 Asp Asp Pro Glu Ala Ile Leu Leu Val Asn Gln Pro Gly Ser Asp Gly
 2915 2920 2925
 Phe Lys Val Asp Ser Thr Pro Leu Phe Gln Val Ala Leu Gly Arg Glu
 2930 2935 2940
 Trp Tyr Ile His Thr Ile Tyr Thr Val Arg Ser Lys Asp Asn Ala Asn
 2945 2950 2955 2960
 Arg Gly Ile Gly Lys Arg Ser Val Glu Tyr His Ser Leu Val Ser Gln
 2965 2970 2975
 Gly Lys Pro Gln Ser Thr Thr Lys Ser Arg Lys Lys Arg Glu Ile Arg
 2980 2985 2990
 Ser Thr Pro Ser Leu Ala Trp Glu Ile Gly Ala Glu Asn Ser Arg Gly
 2995 3000 3005
 Thr Asn Ile Gln His Ile Ala Leu Asp Arg Thr Lys Arg Gln Ile Pro
 3010 3015 3020
 His Gly Arg Ala Pro Pro Asp Gly Ile Leu Pro Trp Glu Leu Asn Ser
 3025 3030 3035 3040
 Pro Ser Ser Ala Val Ser Leu Val Thr Val Val Gly Gly Thr Thr Val
 3045 3050 3055
 Gly Leu Leu Thr Ile Cys Leu Thr Val Ile Ala Val Leu Met Cys Arg
 3060 3065 3070
 Gly Lys Glu Ser Phe Arg Gly Lys Asp Ala Pro Lys Gly Ser Ser Ser
 3075 3080 3085

Ser Glu Pro Met Val Pro Pro Gln Ser His His Asn Asp Ser Ser Glu
 3090 3095 3100
 Val
 3105

<210> 81
 <211> 457
 <212> PRT
 <213> homo sapiens

<400> 81
 Met Gly Cys Ser Gly Ala Trp Gly Leu Ser Cys Pro Cys Pro Gln Thr
 1 5 10 15
 Pro Ser Trp Ala Trp Arg Lys Met Arg Thr Pro Ser Met Arg Asn Arg
 20 25 30
 Ser Gly Ala Val Trp Ser Arg Ala Ser Val Pro Phe Ser Ala Trp Glu
 35 40 45
 Val Glu Val Gln Met Arg Val Thr Gly Leu Gly Arg Arg Gly Ala Gln
 50 55 60
 Gly Met Ala Val Trp Tyr Thr Arg Gly Arg Gly His Val Gly Ser Val
 65 70 75 80
 Leu Gly Gly Leu Ala Ser Trp Asp Gly Ile Gly Ile Phe Phe Asp Ser
 85 90 95
 Pro Ala Glu Asp Thr Gln Asp Ser Pro Ala Ile Arg Val Leu Ala Ser
 100 105 110
 Asp Gly His Ile Pro Ser Glu Gln Pro Gly Asp Gly Ala Ser Gln Gly
 115 120 125
 Leu Gly Ser Cys His Trp Asp Phe Arg Asn Arg Pro His Pro Phe Arg
 130 135 140
 Ala Arg Ile Thr Tyr Trp Gly Gln Arg Leu Arg Met Ser Leu Asn Ser
 145 150 155 160
 Gly Leu Thr Pro Ser Asp Pro Gly Glu Phe Cys Val Asp Val Gly Pro
 165 170 175
 Leu Leu Leu Val Pro Gly Gly Phe Phe Gly Val Ser Ala Ala Thr Gly
 180 185 190
 Thr Leu Ala Asp Asp His Asp Val Leu Ser Phe Leu Thr Phe Ser Leu
 195 200 205
 Ser Glu Pro Ser Pro Glu Val Pro Pro Gln Pro Phe Leu Glu Met Gln
 210 215 220
 His Val Arg Leu Ala Arg Gln Leu Glu Gly Leu Trp Ala Arg Leu Gly
 225 230 235 240
 Leu Gly Thr Arg Glu Asp Val Thr Pro Lys Ser Asp Ser Glu Ala Gln
 245 250 255
 Gly Glu Gly Glu Arg Leu Phe Asp Leu Glu Glu Thr Leu Gly Arg His
 260 265 270
 Arg Arg Ile Leu Gln Ala Leu Arg Gly Leu Ser Lys Gln Leu Ala Gln
 275 280 285
 Ala Glu Arg Gln Trp Lys Lys Gln Leu Gly Pro Gln Ala Lys Pro Gly
 290 295 300
 Leu Thr Glu Ala Gly Asp Ala Ala Val Arg Met Ala Ala Glu Ala Gln
 305 310 315 320
 Val Ser Tyr Leu Pro Val Gly Ile Glu His His Phe Leu Glu Leu Asp
 325 330 335
 His Ile Leu Gly Leu Leu Gln Glu Glu Leu Arg Gly Pro Ala Lys Ala
 340 345 350
 Ala Ala Lys Ala Pro Arg Pro Pro Gly Gln Pro Pro Arg Ala Ser Ser
 355 360 365
 Cys Leu Gln Pro Gly Ile Phe Leu Phe Tyr Leu Leu Ile Gln Thr Val

370 375 380
 Gly Phe Phe Gly Tyr Val His Phe Arg Arg Pro Val Pro Arg Pro Ala
 385 390 395 400
 Lys Thr Met Ala Phe Met Val Lys Thr Met Val Gly Gly Gln Leu Lys
 405 410 415
 Asn Leu Thr Gly Ser Leu Gly Gly Gly Glu Asp Lys Gly Asp Gly Asp
 420 425 430
 Lys Ser Ala Ala Glu Ala Gln Gly Met Ser Arg Glu Glu Tyr Glu Glu
 435 440 445
 Tyr Gln Lys Gln Leu Val Glu Glu Lys
 450 455

<210> 82
 <211> 526
 <212> PRT
 <213> homo sapiens

<400> 82
 Met Pro Ala Val Ser Gly Pro Gly Pro Leu Phe Cys Leu Leu Leu Leu
 1 5 10 15
 Leu Leu Asp Pro His Ser Pro Glu Thr Gly Cys Pro Pro Leu Arg Arg
 20 25 30
 Phe Glu Tyr Lys Leu Ser Phe Lys Gly Pro Arg Leu Ala Leu Pro Gly
 35 40 45
 Ala Gly Ile Pro Phe Trp Ser His His Gly Asp Ala Ile Leu Gly Leu
 50 55 60
 Glu Glu Val Arg Leu Thr Pro Ser Met Arg Asn Arg Ser Gly Ala Val
 65 70 75 80
 Trp Ser Arg Ala Ser Val Pro Phe Ser Ala Trp Glu Val Glu Val Gln
 85 90 95
 Met Arg Val Thr Gly Leu Gly Arg Arg Gly Ala Gln Gly Met Ala Val
 100 105 110
 Trp Tyr Thr Arg Gly Arg Gly His Val Gly Ser Val Leu Gly Gly Leu
 115 120 125
 Ala Ser Trp Asp Gly Ile Gly Ile Phe Phe Asp Ser Pro Ala Glu Asp
 130 135 140
 Thr Gln Asp Ser Pro Ala Ile Arg Val Leu Ala Ser Asp Gly His Ile
 145 150 155 160
 Pro Ser Glu Gln Pro Gly Asp Gly Ala Ser Gln Gly Leu Gly Ser Cys
 165 170 175
 His Trp Asp Phe Arg Asn Arg Pro His Pro Phe Arg Ala Arg Ile Thr
 180 185 190
 Tyr Trp Gly Gln Arg Leu Arg Met Ser Leu Asn Ser Gly Leu Thr Pro
 195 200 205
 Ser Asp Pro Gly Glu Phe Cys Val Asp Val Gly Pro Leu Leu Leu Val
 210 215 220
 Pro Gly Gly Phe Phe Gly Val Ser Ala Ala Thr Gly Thr Leu Ala Asp
 225 230 235 240
 Asp His Asp Val Leu Ser Phe Leu Thr Phe Ser Leu Ser Glu Pro Ser
 245 250 255
 Pro Glu Val Pro Pro Gln Pro Phe Leu Glu Met Gln His Val Arg Leu
 260 265 270
 Ala Arg Gln Leu Glu Gly Leu Trp Ala Arg Leu Gly Leu Gly Thr Arg
 275 280 285
 Glu Asp Val Thr Pro Lys Ser Asp Ser Glu Ala Gln Gly Glu Gly Glu
 290 295 300
 Arg Leu Phe Asp Leu Glu Thr Leu Gly Arg His Arg Arg Ile Leu
 305 310 315 320

Gln Ala Leu Arg Gly Leu Ser Lys Gln Leu Ala Gln Ala Glu Arg Gln
 325 330 335
 Trp Lys Lys Gln Leu Gly Pro Pro Gly Gln Ala Arg Pro Asp Gly Gly
 340 345 350
 Trp Ala Leu Asp Ala Ser Cys Gln Ile Pro Ser Thr Pro Gly Arg Gly
 355 360 365
 Gly His Leu Ser Met Ser Leu Asn Lys Asp Ser Ala Lys Val Gly Ala
 370 375 380
 Leu Leu His Gly Gln Trp Thr Leu Leu Gln Ala Leu Gln Glu Met Arg
 385 390 395 400
 Asp Ala Ala Val Arg Met Ala Ala Glu Ala Gln Val Ser Tyr Leu Pro
 405 410 415
 Val Gly Ile Glu His His Phe Leu Glu Leu Asp His Ile Leu Gly Leu
 420 425 430
 Leu Gln Glu Glu Leu Arg Gly Pro Ala Lys Ala Ala Lys Ala Pro
 435 440 445
 Arg Pro Pro Gly Gln Pro Pro Arg Ala Ser Ser Cys Leu Gln Pro Gly
 450 455 460
 Ile Phe Leu Phe Tyr Leu Leu Ile Gln Thr Val Gly Phe Phe Gly Tyr
 465 470 475 480
 Val His Phe Arg Gln Glu Leu Asn Lys Ser Leu Gln Glu Cys Leu Ser
 485 490 495
 Thr Gly Ser Leu Pro Leu Gly Pro Ala Pro His Thr Pro Arg Ala Leu
 500 505 510
 Gly Ile Leu Arg Arg Gln Pro Leu Pro Ala Ser Met Pro Ala
 515 520 525

<210> 83

<211> 904

<212> PRT

<213> homo sapiens

<400> 83

Met Leu Leu Ala Leu Cys Ser Ser Leu Ala Leu Ile Phe Ala Ala Pro
 1 5 10 15
 Val Ser Gly Gln Leu Glu His Ser Gly Asn Tyr Tyr Cys Thr Ala Asp
 20 25 30
 Asn Gly Phe Gly Pro Gln His Ser Glu Val Val Ser Leu Ser Val Thr
 35 40 45
 Val Pro Val Ser His Pro Val Leu Thr Leu Ser Ser Ala Glu Ala Leu
 50 55 60
 Thr Phe Glu Gly Ala Thr Val Thr Leu His Ser Ser Leu Ile Leu Gln
 65 70 75 80
 Ala Pro Leu Ser Val Phe Glu Gly Asp Phe Val Val Leu Arg Cys Arg
 85 90 95
 Ala Lys Ala Glu Val Thr Leu Asn Thr Met Tyr Lys Asn Gly Asn Val
 100 105 110
 Leu Thr Phe Leu Asn Lys Ser Ser Asp Phe His Ile His His Ala Ser
 115 120 125
 Leu Lys Asp Asn Gly Ala Tyr His Phe Thr Gly Phe Asn Gly Ser Asn
 130 135 140
 Phe Ser Val Ser Ser Asn Ile Val Lys Ile Gln Val Gln Glu His Leu
 145 150 155 160
 Leu Pro Gln Trp Phe Leu Lys Ala Pro Asp Pro Thr Val Ala Leu Ser
 165 170 175
 Glu Ile Phe Ser Val Asn Arg Gly Pro Leu Leu Thr Gly Thr Gly Ser
 180 185 190
 Arg Val Met Thr Pro Trp Ile Tyr Phe Pro Thr Glu Asp Trp Asn Phe

195 200 205
 Thr Leu Ile Pro Ile Thr Val Asp Asp Ala Cys Lys Arg Pro Cys Ala
 210 215 220
 Pro Arg Ala Pro Trp Glu Val Gly Ser Leu Thr Pro Gly Lys Ser Phe
 225 230 235 240
 Gln Gln Lys Gly Asn Pro Asp Leu Leu Met Gly Pro Phe Asp Val Leu
 245 250 255
 His Leu Ser Leu Ile Thr Leu Phe Cys Asn Met Ala Gly Ser Leu Phe
 260 265 270
 Tyr Tyr Met Glu Leu Gly Glu Lys Asp Ala Leu Phe Val Thr Gly
 275 280 285
 Asn Glu Ser Arg Ser Tyr His Trp Phe Gln Lys Phe Ser Leu Ala Gly
 290 295 300
 Gly Gln Glu Ala Asp Gln Lys Leu Trp Phe Pro Pro Gly Leu Met Ser
 305 310 315 320
 Gln Asp Ile Phe Ile Tyr Ile Arg Gln Gly Glu Ser Cys Leu Val Ile
 325 330 335
 Glu Met Phe His Gln Val Tyr Arg Arg Pro Ala Gly Gly Val Pro Val
 340 345 350
 Glu His Met Ser Val Trp Ala Leu Arg Val Asn Ser Ser Gly Leu Phe
 355 360 365
 Ala Tyr Ala Asp Gly Trp Leu Phe Thr Leu Phe Gln Leu Gln Ser Val
 370 375 380
 Asp Asn Leu Ser Pro Ser Thr Gln Ser Gln Thr His Glu Gly His Glu
 385 390 395 400
 Lys Leu Cys Pro Phe Leu Ala Ile Gly Pro Pro Ala His Ser Arg Gly
 405 410 415
 Ser Phe Leu Arg Ala Lys Lys Ser Leu Val Ala Tyr Ile Lys Gly Asn
 420 425 430
 Gln Leu Ser Phe Pro Pro Val Glu Asp Leu Leu Pro Lys Ser Gln Trp
 435 440 445
 Pro Cys Ile Gln Val Leu Pro Arg Asn Ile Ala Ala Ala His Lys
 450 455 460
 Pro Val Ile Ser Val His Pro Pro Trp Thr Thr Phe Phe Lys Gly Glu
 465 470 475 480
 Arg Val Thr Leu Thr Cys Asn Gly Phe Gln Phe Tyr Ala Thr Glu Lys
 485 490 495
 Thr Thr Trp Tyr His Arg His Tyr Trp Gly Glu Lys Leu Thr Leu Thr
 500 505 510
 Pro Gly Asn Thr Leu Glu Val Arg Glu Ser Gly Leu Tyr Arg Cys Gln
 515 520 525
 Ala Arg Gly Ser Pro Arg Ser Asn Pro Val Arg Leu Leu Phe Ser Ser
 530 535 540
 Gly Glu Lys Glu Asp Cys Val Ser Asp Lys Asn Pro Ala Thr Asn His
 545 550 555 560
 Thr Pro Met Ser Arg Lys Arg Ser Ser Cys Ser Ser Leu Ser Ala Thr
 565 570 575
 Ser Phe Ile Ala Pro Ala Leu Arg Leu Asp Ser Leu Ile Leu Gln Ala
 580 585 590
 Pro Tyr Ser Val Phe Glu Gly Asp Thr Leu Val Leu Arg Cys His Arg
 595 600 605
 Arg Arg Lys Glu Lys Leu Thr Ala Val Lys Tyr Thr Trp Asn Gly Asn
 610 615 620
 Ile Leu Ser Ile Ser Asn Lys Ser Trp Asp Leu Leu Ile Pro Gln Ala
 625 630 635 640
 Ser Ser Asn Asn Asn Gly Asn Tyr Arg Cys Ile Gly Tyr Gly Asp Glu
 645 650 655
 Asn Asp Val Phe Arg Ser Asn Phe Lys Ile Ile Lys Ile Gln Gly Ile
 660 665 670

Pro Val Ser Gly Val Leu Leu Glu Thr Gln Pro Ser Gly Gly Gln Ala
 675 680 685
 Val Glu Gly Glu Met Leu Val Leu Val Cys Ser Val Ala Glu Gly Thr
 690 695 700
 Gly Asp Thr Thr Phe Ser Trp His Arg Glu Asp Met Gln Glu Ser Leu
 705 710 715 720
 Gly Arg Lys Thr Gln Arg Ser Leu Arg Ala Glu Leu Glu Leu Pro Ala
 725 730 735
 Ile Arg Gln Ser His Ala Gly Gly Tyr Tyr Cys Thr Ala Asp Asn Ser
 740 745 750
 Tyr Gly Pro Val Gln Ser Met Val Leu Asn Val Thr Val Arg Glu Thr
 755 760 765
 Pro Gly Asn Arg Asp Gly Leu Val Ala Ala Gly Ala Thr Gly Gly Leu
 770 775 780
 Leu Ser Ala Leu Leu Leu Ala Val Ala Leu Leu Phe His Cys Trp Arg
 785 790 795 800
 Arg Arg Lys Ser Val His Pro Lys Lys Gly Asp Leu Val Tyr Ser Glu
 805 810 815
 Ile Gln Thr Thr Gln Leu Gly Glu Glu Glu Glu Gly Asn His Gly Asn
 820 825 830
 Lys Asn Gln Glu Leu Glu Leu Val Asn Val Gly Glu Ser Phe Ser His
 835 840 845
 Arg Ala Cys Ile Trp Ser Thr Leu Met Gly Thr Cys Gln Thr Ile Gly
 850 855 860
 Gly Ala Asn Thr Ser Arg Thr Leu Leu Glu Asp Lys Asp Val Ser Val
 865 870 875 880
 Val Tyr Ser Glu Val Lys Thr Gln His Pro Asp Asn Ser Ala Gly Lys
 885 890 895
 Ile Ser Ser Lys Asp Glu Glu Ser
 900

<210> 84

<211> 515

<212> PRT

<213> homo sapiens

<400> 84

Met Leu Leu Trp Ala Ser Leu Leu Ala Phe Ala Pro Val Cys Gly Gln
 1 5 10 15
 Ser Ala Ala Ala His Lys Pro Val Ile Ser Val His Pro Pro Trp Thr
 20 25 30
 Thr Phe Phe Lys Gly Glu Arg Val Thr Leu Thr Cys Asn Gly Phe Gln
 35 40 45
 Phe Tyr Ala Thr Glu Lys Thr Thr Trp Tyr His Arg His Tyr Trp Gly
 50 55 60
 Glu Lys Leu Thr Leu Thr Pro Gly Asn Thr Leu Glu Val Arg Glu Ser
 65 70 75 80
 Gly Leu Tyr Arg Cys Gln Ala Arg Gly Ser Pro Arg Ser Asn Pro Val
 85 90 95
 Arg Leu Leu Phe Ser Ser Asp Ser Leu Ile Leu Gln Ala Pro Tyr Ser
 100 105 110
 Val Phe Glu Gly Asp Thr Leu Val Leu Arg Cys His Arg Arg Arg Lys
 115 120 125
 Glu Lys Leu Thr Ala Val Lys Tyr Thr Trp Asn Gly Asn Ile Leu Ser
 130 135 140
 Ile Ser Asn Lys Ser Trp Asp Leu Leu Ile Pro Gln Ala Ser Ser Asn
 145 150 155 160
 Asn Asn Gly Asn Tyr Arg Cys Ile Gly Tyr Gly Asp Glu Asn Asp Val

165 170 175
 Phe Arg Ser Asn Phe Lys Ile Ile Lys Ile Gln Glu Leu Phe Pro His
 180 185 190
 Pro Glu Leu Lys Ala Thr Asp Ser Gln Pro Thr Glu Gly Asn Ser Val
 195 200 205
 Asn Leu Ser Cys Glu Thr Gln Leu Pro Pro Glu Arg Ser Asp Thr Pro
 210 215 220
 Leu His Phe Asn Phe Phe Arg Asp Gly Glu Val Ile Leu Ser Asp Trp
 225 230 235 240
 Ser Thr Tyr Pro Glu Leu Gln Leu Pro Thr Val Trp Arg Glu Asn Ser
 245 250 255
 Gly Ser Tyr Trp Cys Gly Ala Glu Thr Val Arg Gly Asn Ile His Lys
 260 265 270
 His Ser Pro Ser Leu Gln Ile His Val Gln Arg Ile Pro Val Ser Gly
 275 280 285
 Val Leu Leu Glu Thr Gln Pro Ser Gly Gly Gln Ala Val Glu Gly Glu
 290 295 300
 Met Leu Val Leu Val Cys Ser Val Ala Glu Gly Thr Gly Asp Thr Thr
 305 310 315 320
 Phe Ser Trp His Arg Glu Asp Met Gln Glu Ser Leu Gly Arg Lys Thr
 325 330 335
 Gln Arg Ser Leu Arg Ala Glu Leu Glu Leu Pro Ala Ile Arg Gln Ser
 340 345 350
 His Ala Gly Gly Tyr Tyr Cys Thr Ala Asp Asn Ser Tyr Gly Pro Val
 355 360 365
 Gln Ser Met Val Leu Asn Val Thr Val Arg Glu Thr Pro Gly Asn Arg
 370 375 380
 Asp Gly Leu Val Ala Ala Gly Ala Thr Gly Gly Leu Leu Ser Ala Leu
 385 390 395 400
 Leu Leu Ala Val Ala Leu Leu Phe His Cys Trp Arg Arg Arg Lys Ser
 405 410 415
 Gly Val Gly Phe Leu Gly Asp Glu Thr Arg Leu Pro Pro Ala Pro Gly
 420 425 430
 Pro Gly Glu Ser Ser His Ser Ile Cys Pro Ala Gln Val Glu Leu Gln
 435 440 445
 Ser Leu Tyr Val Asp Val His Pro Lys Lys Gly Asp Leu Val Tyr Ser
 450 455 460
 Glu Ile Gln Thr Thr Gln Leu Gly Glu Glu Glu Ala Asn Thr Ser
 465 470 475 480
 Arg Thr Leu Leu Glu Asp Lys Asp Val Ser Val Val Tyr Ser Glu Val
 485 490 495
 Lys Thr Gln His Pro Asp Asn Ser Ala Gly Lys Ile Ser Ser Lys Asp
 500 505 510
 Glu Glu Ser
 515

<210> 85

<211> 831

<212> PRT

<213> homo sapiens

<400> 85

Asx Met Ala Val Gly Gly Gly His Lys Gly Val Arg Cys Pro Pro Ser
 1 5 10 15
 Ala Arg Ser Ser Gln Val Pro Thr Cys Cys Ala Gly Trp Arg Gln Gln
 20 25 30
 Gly Asp Glu Cys Gly Ile Ala Val Cys Glu Gly Asn Ser Thr Cys Ser
 35 40 45

Glu Asn Glu Val Cys Val Arg Pro Gly Glu Cys Arg Cys Arg His Gly
 50 55 60
 Tyr Phe Gly Ala Asn Cys Asp Thr Lys Cys Pro Arg Gln Phe Trp Gly
 65 70 75 80
 Pro Asp Cys Lys Glu Leu Cys Ser Cys His Pro His Gly Gln Cys Glu
 85 90 95
 Asp Val Thr Gly Gln Cys Thr Cys His Ala Arg Arg Trp Gly Ala Arg
 100 105 110
 Cys Glu His Ala Cys Gln Cys Gln His Gly Thr Cys His Pro Arg Ser
 115 120 125
 Gly Ala Cys Arg Cys Glu Ser Gly Trp Trp Gly Ala Gln Cys Ala Ser
 130 135 140
 Ala Cys Tyr Cys Ser Ala Thr Ser Arg Cys Asp Pro Gln Thr Gly Ala
 145 150 155 160
 Cys Leu Cys His Ala Gly Trp Trp Gly Arg Ser Cys Asn Asn Gln Cys
 165 170 175
 Ala Cys Asn Ser Ser Pro Cys Glu Gln Gln Ser Gly Arg Cys Gln Cys
 180 185 190
 Arg Glu Arg Thr Phe Gly Ala Arg Cys Asp Arg Tyr Cys Gln Cys Phe
 195 200 205
 Arg Gly Arg Cys His Pro Val Asp Gly Thr Cys Ala Cys Glu Pro Gly
 210 215 220
 Tyr Arg Gly Lys Tyr Cys Arg Glu Pro Cys Pro Ala Gly Phe Tyr Gly
 225 230 235 240
 Leu Gly Cys Arg Arg Arg Cys Gly Gln Cys Lys Gly Gln Gln Pro Cys
 245 250 255
 Thr Val Ala Glu Gly Arg Cys Leu Thr Cys Glu Pro Gly Trp Asn Gly
 260 265 270
 Thr Lys Cys Asp Gln Pro Cys Ala Thr Gly Phe Tyr Gly Glu Gly Cys
 275 280 285
 Ser His Arg Cys Pro Pro Cys Arg Asp Gly His Ala Cys Asn His Val
 290 295 300
 Thr Gly Lys Cys Thr Arg Cys Asn Ala Gly Trp Ile Gly Asp Arg Cys
 305 310 315 320
 Glu Thr Lys Cys Ser Asn Gly Thr Tyr Gly Glu Asp Cys Ala Phe Val
 325 330 335
 Cys Ala Asp Cys Gly Ser Gly His Cys Asp Phe Gln Ser Gly Arg Cys
 340 345 350
 Leu Cys Ser Pro Gly Val His Gly Pro His Cys Asn Val Thr Cys Pro
 355 360 365
 Pro Gly Leu His Gly Ala Asp Cys Ala Gln Ala Cys Ser Cys His Glu
 370 375 380
 Asp Thr Cys Asp Pro Val Thr Gly Ala Cys His Leu Glu Thr Asn Gln
 385 390 395 400
 Arg Lys Gly Val Met Gly Ala Gly Ala Leu Leu Val Leu Leu Val Cys
 405 410 415
 Leu Leu Leu Ser Leu Leu Gly Cys Cys Cys Ala Cys Arg Gly Lys Asp
 420 425 430
 Pro Thr Arg Arg Pro Arg Pro Arg Arg Glu Leu Ser Leu Gly Arg Lys
 435 440 445
 Lys Ala Pro His Arg Leu Cys Gly Arg Phe Ser Arg Ile Ser Met Lys
 450 455 460
 Leu Pro Arg Ile Pro Leu Arg Arg Gln Lys Leu Pro Lys Val Val Val
 465 470 475 480
 Ala His His Asp Leu Asp Asn Thr Leu Asn Cys Ser Phe Leu Glu Pro
 485 490 495
 Pro Ser Gly Leu Glu Gln Pro Ser Pro Ser Trp Ser Ser Arg Ala Ser
 500 505 510
 Phe Ser Ser Phe Asp Thr Thr Asp Glu Gly Pro Val Tyr Cys Val Pro

515 520 525
 His Glu Glu Ala Pro Ala Glu Ser Arg Asp Pro Glu Val Pro Thr Val
 530 535 540
 Pro Ala Glu Ala Pro Ala Pro Ser Pro Val Pro Leu Thr Thr Pro Ala
 545 550 555 560
 Ser Ala Glu Glu Ala Ile Pro Leu Pro Ala Ser Ser Asp Ser Glu Arg
 565 570 575
 Ser Ala Ser Ser Val Glu Gly Pro Gly Gly Ala Leu Tyr Ala Arg Val
 580 585 590
 Ala Arg Arg Glu Ala Arg Pro Ala Arg Ala Arg Gly Glu Ile Gly Gly
 595 600 605
 Leu Ser Leu Ser Pro Ser Pro Glu Arg Arg Lys Pro Pro Pro Asp
 610 615 620
 Pro Ala Thr Lys Pro Lys Val Ser Trp Ile His Gly Lys His Ser Ala
 625 630 635 640
 Ala Ala Ala Gly Arg Ala Pro Ser Pro Pro Pro Gly Ser Glu Ala
 645 650 655
 Ala Pro Ser Pro Ser Lys Arg Lys Arg Thr Pro Ser Asp Lys Ser Ala
 660 665 670
 His Thr Val Glu His Gly Ser Pro Arg Thr Arg Asp Pro Thr Pro Arg
 675 680 685
 Pro Pro Gly Leu Pro Glu Glu Ala Thr Ala Leu Ala Ala Pro Ser Pro
 690 695 700
 Pro Arg Ala Arg Ala Arg Ala Ala Pro Arg Pro Leu Gly Ala His Gly
 705 710 715 720
 Arg Arg Arg Ser Pro Ala Lys Arg Ala Glu Ala Ala Ser Met Leu Ala
 725 730 735
 Ala Asp Val Arg Gly Lys Thr Arg Ser Leu Gly Arg Ala Glu Val Ala
 740 745 750
 Leu Gly Ala Gln Gly Pro Arg Glu Lys Pro Ala Pro Pro Gln Lys Ala
 755 760 765
 Lys Arg Ser Val Pro Pro Ala Ser Pro Ala Arg Ala Pro Pro Ala Thr
 770 775 780
 Glu Thr Pro Gly Pro Glu Lys Ala Ala Thr Asp Leu Pro Ala Pro Glu
 785 790 795 800
 Thr Pro Arg Lys Lys Thr Pro Ile Gln Lys Pro Pro Arg Lys Lys Ser
 805 810 815
 Arg Glu Ala Ala Gly Glu Leu Gly Arg Ala Gly Ala Pro Thr Leu
 820 825 830

<210> 86
 <211> 871
 <212> PRT
 <213> homo sapiens

<400> 86
 Asx Met Glu Gly Ala Gly Pro Arg Gly Ala Gly Pro Ala Arg Arg Arg
 1 5 10 15
 Gly Ala Gly Gly Pro Pro Ser Pro Leu Leu Pro Ser Leu Leu Leu Leu
 20 25 30
 Leu Leu Leu Trp Met Leu Pro Asp Thr Val Ala Pro Gln Glu Leu Asn
 35 40 45
 Pro Arg Gly Arg Asn Val Cys Arg Ala Pro Gly Ser Gln Val Pro Thr
 50 55 60
 Cys Cys Ala Gly Trp Arg Gln Gln Gly Asp Glu Cys Gly Ile Ala Val
 65 70 75 80
 Cys Glu Gly Asn Ser Thr Cys Ser Glu Asn Glu Val Cys Val Arg Pro
 85 90 95

Gly	Glu	Cys	Arg	Cys	Arg	His	Gly	Tyr	Phe	Gly	Ala	Asn	Cys	Asp	Thr	100	105	110
Lys	Cys	Pro	Arg	Gln	Phe	Trp	Gly	Pro	Asp	Cys	Lys	Glu	Leu	Cys	Ser	115	120	125
Cys	His	Pro	His	Gly	Gln	Cys	Glu	Asp	Val	Thr	Gly	Gln	Cys	Thr	Cys	130	135	140
His	Ala	Arg	Arg	Trp	Gly	Ala	Arg	Cys	Glu	His	Ala	Cys	Gln	Cys	Gln	145	150	155
His	Gly	Thr	Cys	His	Pro	Arg	Ser	Gly	Ala	Cys	Arg	Cys	Glu	Ser	Gly	165	170	175
Trp	Trp	Gly	Ala	Gln	Cys	Ala	Ser	Ala	Cys	Tyr	Cys	Ser	Ala	Thr	Ser	180	185	190
Arg	Cys	Asp	Pro	Gln	Thr	Gly	Ala	Cys	Leu	Cys	His	Ala	Gly	Trp	Trp	195	200	205
Gly	Arg	Ser	Cys	Asn	Asn	Gln	Cys	Ala	Cys	Asn	Ser	Ser	Pro	Cys	Glu	210	215	220
Gln	Gln	Ser	Gly	Arg	Cys	Gln	Cys	Arg	Glu	Arg	Thr	Phe	Gly	Ala	Arg	225	230	235
Cys	Asp	Arg	Tyr	Cys	Gln	Cys	Phe	Arg	Gly	Arg	Cys	His	Pro	Val	Asp	245	250	255
Gly	Thr	Cys	Ala	Cys	Glu	Pro	Gly	Tyr	Arg	Gly	Lys	Tyr	Cys	Arg	Glu	260	265	270
Pro	Cys	Pro	Ala	Gly	Phe	Tyr	Gly	Leu	Gly	Cys	Arg	Arg	Arg	Cys	Gly	275	280	285
Gln	Cys	Lys	Gly	Gln	Gln	Pro	Cys	Thr	Val	Ala	Glu	Gly	Arg	Cys	Leu	290	295	300
Thr	Cys	Glu	Pro	Gly	Trp	Asn	Gly	Thr	Lys	Cys	Asp	Gln	Pro	Cys	Ala	305	310	315
Thr	Gly	Phe	Tyr	Gly	Glu	Gly	Cys	Ser	His	Arg	Cys	Pro	Pro	Cys	Arg	325	330	335
Asp	Gly	His	Ala	Cys	Asn	His	Val	Thr	Gly	Lys	Cys	Thr	Arg	Cys	Asn	340	345	350
Ala	Gly	Trp	Ile	Gly	Asp	Arg	Cys	Glu	Thr	Lys	Cys	Ser	Asn	Gly	Thr	355	360	365
Tyr	Gly	Glu	Asp	Cys	Ala	Phe	Val	Cys	Ala	Asp	Cys	Gly	Ser	Gly	His	370	375	380
Cys	Asp	Phe	Gln	Ser	Gly	Arg	Cys	Leu	Cys	Ser	Pro	Gly	Val	His	Gly	385	390	395
Pro	His	Cys	Asn	Val	Thr	Cys	Pro	Pro	Gly	Leu	His	Gly	Ala	Asp	Cys	405	410	415
Ala	Gln	Ala	Cys	Ser	Cys	His	Glu	Asp	Thr	Cys	Asp	Pro	Val	Thr	Gly	420	425	430
Ala	Cys	His	Leu	Glu	Thr	Asn	Gln	Arg	Lys	Gly	Val	Met	Gly	Ala	Gly	435	440	445
Ala	Leu	Leu	Val	Leu	Leu	Val	Cys	Leu	Leu	Leu	Ser	Leu	Leu	Gly	Cys	450	455	460
Cys	Cys	Ala	Cys	Arg	Gly	Lys	Asp	Pro	Thr	Arg	Arg	Pro	Arg	Pro	Arg	465	470	475
Arg	Glu	Leu	Ser	Leu	Gly	Arg	Lys	Lys	Ala	Pro	His	Arg	Leu	Cys	Gly	485	490	495
Arg	Phe	Ser	Arg	Ile	Ser	Met	Lys	Leu	Pro	Arg	Ile	Pro	Leu	Arg	Arg	500	505	510
Gln	Lys	Leu	Pro	Lys	Val	Val	Val	Ala	His	His	Asp	Leu	Asp	Asn	Thr	515	520	525
Leu	Asn	Cys	Ser	Phe	Leu	Glu	Pro	Pro	Ser	Gly	Leu	Glu	Gln	Pro	Ser	530	535	540
Pro	Ser	Trp	Ser	Ser	Arg	Ala	Ser	Phe	Ser	Ser	Phe	Asp	Thr	Thr	Asp	545	550	555
Glu	Gly	Pro	Val	Tyr	Cys	Val	Pro	His	Glu	Glu	Ala	Pro	Ala	Glu	Ser	560		

565 570 575
 Arg Asp Pro Glu Val Pro Thr Val Pro Ala Glu Ala Pro Ala Pro Ser
 580 585 590
 Pro Val Pro Leu Thr Thr Pro Ala Ser Ala Glu Glu Ala Ile Pro Leu
 595 600 605
 Pro Ala Ser Ser Asp Ser Glu Arg Ser Ala Ser Ser Val Glu Gly Pro
 610 615 620
 Gly Gly Ala Leu Tyr Ala Arg Val Ala Arg Arg Glu Ala Arg Pro Ala
 625 630 635 640
 Arg Ala Arg Gly Glu Ile Gly Gly Leu Ser Leu Ser Pro Ser Pro Glu
 645 650 655
 Arg Arg Lys Pro Pro Pro Pro Asp Pro Ala Thr Lys Pro Lys Val Ser
 660 665 670
 Trp Ile His Gly Lys His Ser Ala Ala Ala Ala Gly Arg Ala Pro Ser
 675 680 685
 Pro Pro Pro Pro Gly Ser Glu Ala Ala Pro Ser Pro Ser Lys Arg Lys
 690 695 700
 Arg Thr Pro Ser Asp Lys Ser Ala His Thr Val Glu His Gly Ser Pro
 705 710 715 720
 Arg Thr Arg Asp Pro Thr Pro Arg Pro Pro Gly Leu Pro Glu Glu Ala
 725 730 735
 Thr Ala Leu Ala Ala Pro Ser Pro Pro Arg Ala Arg Ala Arg Ala Ala
 740 745 750
 Pro Arg Pro Leu Gly Ala His Gly Arg Arg Arg Ser Pro Ala Lys Arg
 755 760 765
 Ala Glu Ala Ala Ser Met Leu Ala Ala Asp Val Arg Gly Lys Thr Arg
 770 775 780
 Ser Leu Gly Arg Ala Glu Val Ala Leu Gly Ala Gln Gly Pro Arg Glu
 785 790 795 800
 Lys Pro Ala Pro Pro Gln Lys Ala Lys Arg Ser Val Pro Pro Ala Ser
 805 810 815
 Pro Ala Arg Ala Pro Pro Ala Thr Glu Thr Pro Gly Pro Glu Lys Ala
 820 825 830
 Ala Thr Asp Leu Pro Ala Pro Glu Thr Pro Arg Lys Lys Thr Pro Ile
 835 840 845
 Gln Lys Pro Pro Arg Lys Lys Ser Arg Glu Ala Ala Gly Glu Leu Gly
 850 855 860
 Arg Ala Gly Ala Pro Thr Leu
 865 870

<210> 87

<211> 134

<212> PRT

<213> homo sapiens

<400> 87

Ile Asp Cys Arg Ala Glu Gln Gly Arg Thr Pro Leu Met Val Ala Val
 1 5 10 15
 Gly Leu Pro Asp Pro Ala Leu Arg Ala Arg Phe Val Arg Leu Leu Leu
 20 25 30
 Glu Gln Gly Ala Ala Val Asn Leu Arg Asp Glu Arg Gly Arg Thr Ala
 35 40 45
 Leu Ser Leu Ala Cys Glu Arg Gly His Leu Asp Ala Val Gln Leu Leu
 50 55 60
 Val Gln Phe Ser Gly Asp Pro Glu Ala Ala Asp Ser Ala Gly Asn Ser
 65 70 75 80
 Pro Val Met Trp Ala Ala Ala Cys Gly His Gly Ala Val Leu Glu Phe
 85 90 95

Leu Val Arg Ser Phe Arg Arg Leu Gly Leu Arg Leu Asp Arg Thr Asn
 100 105 110
 Arg Ala Gly Leu Thr Ala Leu Gln Leu Ala Ala Ala Arg Gly His Gly
 115 120 125
 Thr Cys Val Gln Ala Leu
 130

<210> 88

<211> 324

<212> PRT

<213> homo sapiens

<400> 88

Met Leu Lys Pro Lys Asp Leu Cys Pro Arg Ala Gly Thr Arg Thr Phe
 1 5 10 15
 Leu Glu Ala Met Gln Ala Gly Lys Val His Leu Ala Arg Phe Val Leu
 20 25 30
 Asp Ala Leu Asp Arg Ser Ile Ile Asp Cys Arg Ala Glu Gln Gly Arg
 35 40 45
 Thr Pro Leu Met Val Ala Val Gly Leu Pro Asp Pro Ala Leu Arg Ala
 50 55 60
 Arg Phe Val Arg Leu Leu Leu Glu Gln Gly Ala Ala Val Asn Leu Arg
 65 70 75 80
 Asp Glu Arg Gly Arg Thr Ala Leu Ser Leu Ala Cys Glu Arg Gly His
 85 90 95
 Leu Asp Ala Val Gln Leu Leu Val Gln Phe Ser Gly Asp Pro Glu Ala
 100 105 110
 Ala Asp Ser Ala Gly Asn Ser Pro Val Met Trp Ala Ala Ala Cys Gly
 115 120 125
 His Gly Ala Val Leu Glu Phe Leu Val Arg Ser Phe Arg Arg Leu Gly
 130 135 140
 Leu Arg Leu Asp Arg Thr Asn Arg Ala Gly Leu Thr Ala Leu Gln Leu
 145 150 155 160
 Ala Ala Ala Arg Gly His Gly Thr Ser Ala Gly Gly His Gly Gly Glu
 165 170 175
 Ala Gly Ser Ala Gly Lys Asn Ser Gly Arg His Arg Ala Gln Gly Ser
 180 185 190
 Glu Arg Pro Glu Leu Gly Arg Ser Met Ser Leu Ala Leu Gly Ala Val
 195 200 205
 Thr Glu Glu Glu Ala Ala Arg Leu Arg Ala Gly Ala Leu Met Ala Leu
 210 215 220
 Pro Asn Ser Pro Gln Ser Ser Gly Thr Gly Arg Trp Arg Ser Gln Glu
 225 230 235 240
 Val Leu Glu Gly Ala Pro Pro Thr Leu Ala Gln Ala Pro Ile Gly Leu
 245 250 255
 Ser Pro His Pro Glu Gly Gly Pro Gly Ser Gly Arg Leu Gly Leu Arg
 260 265 270
 Arg Arg Ser Thr Ala Pro Asp Ile Pro Ser Leu Val Gly Glu Ala Pro
 275 280 285
 Gly Pro Glu Ser Gly Pro Glu Leu Glu Ala Asn Ala Leu Ser Val Ser
 290 295 300
 Val Pro Gly Pro Asn Pro Trp Gln Ala Gly Thr Glu Ala Val Val Leu
 305 310 315 320
 Arg Ala Gln Arg

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/28462

A. CLASSIFICATION OF SUBJECT MATTER																						
IPC(7) : C12N 15/00, 12; C07K 14/435																						
US CL : 435/69.1, 320.1, 325; 530/350; 536/23.1, 23.5																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
B. FIELDS SEARCHED																						
Minimum documentation searched (classification system followed by classification symbols)																						
U.S. : 435/69.1, 320.1, 325; 530/350; 536/23.1, 23.5																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)																						
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
A, P	Genbank Accession No. AC007395, 30 September 2000 (30.09.00), see in particular nucleotides 123581 through 122421.	1-7																				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.																						
* Special categories of cited documents: <table border="0"> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																			
"E"	earlier application or patent published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																			
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																			
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family																			
"P"	document published prior to the international filing date but later than the priority date claimed																					
Date of the actual completion of the international search		Date of mailing of the international search report																				
30 October 2001 (30.10.2001)		15 JAN 2002																				
Name and mailing address of the ISA/US		Authorized officer																				
Commissioner of Patents and Trademarks		Marianne P. Allen																				
Box PCT																						
Washington, D.C. 20231																						
Facsimile No. (703)305-3230		Telephone No. 703-308-0196																				

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/28462

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-7 with respect to SEQ ID NOS: 1 and 45

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/28462

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Claims 1-7 reference SEQ ID NOS. listed in Table 1 on page 24 of the description. Each nucleotide and corresponding amino acid sequence pair in Table 1 forms an inventive concept. Thus, with respect to claims 1-7, SEQ ID NOS: 1 and 45 form the first inventive concept, SEQ ID NOS: 2 and 46 form the second inventive concept, and so forth. There are a total of 44 inventions encompassed by the claims. The different sequence pairs have no obvious special technical feature in common as they appear to be structurally unrelated sequences.

As such, claims 1-7 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features.